SAMPLING FOR PESTICIDE RESIDUES IN CALIFORNIA WELL WATER:

1986 WELL INVENTORY DATA BASE

FIRST ANNUAL REPORT TO THE LEGISLATURE,
STATE DEPARTMENT OF HEALTH SERVICES, AND
STATE WATER RESOURCES CONTROL BOARD

Pursuant to the
Pesticide Contamination Prevention Act

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Environmental Hazards Assessment Program
Environmental Monitoring and Pest Management Branch
California Department of Food and Agriculture

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STATE OF CALIFORNIA GEORGE DEUKMEJIAN, *Governor*

DEPARTMENT OF FOOD AND AGRICULTURE

1220 N Street
Sacramento, CA 95814

May 27, 1987

TO: INTERESTED PARTIES

SUBJECT: WELL INVENTORY DATA BASE REPORT

Enclosed for your information is the first annual report to the Legislature on the contents of CDFA's Well Inventory data base, as required by the Pesticide Contamination Prevention Act (AB 2021). This report is a follow-up to our July, 1985 report, Agricultural Pesticide Residues in California Well Water: Development and Summary of a Well Inventory Data Base for Nonpoint Sources, which summarized results of well water sampling for agricultural pesticide residues from 1975-1984 collected by CDFA. Since last year, the data base increased from about 10,000 records to over 70,000 records, including results of sampling of large municipal water systems by the California Department of Health Services pursuant to AB 1803. The results compiled from 1975-1984 include only a small amount of sampling data associated with apparent point sources, such as leakage from storage or waste sites. However, under the terms of AB 2021, all pesticide sampling information is now included in the data base.

If you have any questions regarding this report, please call Mary Brown, Research Analyst, at (916) 324-8916.

Sincerely,

Ronald Oshima

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Enclosure

EXECUTIVE SUMMARY

The Pesticide Contamination Prevention Act (PCPA, AB 2021), which became law on January 1,1986, requires the California Department of Food and Agriculture (CDFA) to maintain a statewide data base of wells sampled by public agencies for the presence of pesticide active ingredients. The Act also directs the CDFA to report annually on the contents of the data base to the Legislature, the Department of Health Services (CDHS) and the State Water Resources Control Board (SWRCB). This first annual report presents information on the number of wells sampled, the number of wells with detectable levels of pesticide residues for each county, factors contributing to ground water contamination by pesticides used in agriculture, and actions taken by the CDFA and the State Water Resources Control Board (SWRCB) to prevent pesticides from entering ground water.

Prior to enactment of the PCPA, the CDFA had compiled a data base of well sampling results for pesticide residues suspected of originating from agricultural nonpoint sources. This data base was created for the purpose of defining the extent of ground water contamination resulting from the agricultural use of pesticides. The CDFA July, 1985 publication entitled Agricultural Pesticide Residues in California Well Water: Development and Summary of a Well Inventory Data Base describes the initial data base, which contained sampling results from 1975 to early 1984. The 1985 data base is updated in this report, which describes all results from 1975 to 1986 received to date.

As of 12/1/86, all data submitted for inclusion in the data base must meet minimum well sample reporting requirements jointly established in spring, 1986, by the CDFA, CDHS, and SWRCB pursuant to Section 13152 (d) of the PCPA (AB 2021). In keeping with these requirements, the following data fields are included for each record in the Well Inventory:

1. county
2. state well number (township/range/ section/tract/sequence number/ base and meridian)
3. sampling agency
4. date of sample
5. type of sample
6. chemical analyzed
7. chemical concentration, in parts per billion
8. minimum detectable limit, in parts per billion
9. analyzing laboratory
10. date of analysis
11. well construction information
12. type of well

As in 1985, the CDFA portion of this report concentrates on pesticide residue data from agricultural nonpoint sources. Suspected point source results were not included in the original data base, since ground water contamination from point sources is not within CDFA's regulatory authority. However, according to PCPA requirements, sampling data received from 1986 on will be included in the data base regardless of the source of contamination. For example, sources are largely unknown for sampling data from AB 1803 monitoring of large water systems, which now constitute the bulk of the data base.

The 1986 Well Inventory data base includes well sampling results from the following agencies: California Departments of Food and Agriculture (CDFA), Health Services (CDHS) and Water Resources (DWR); Regional Water Quality Control Boards (RWQCB); State Water Resources Control Board (SWRCB); City of Davis; Fresno and San Mateo County Environmental Health Departments; and Lake, Mendocino and Yolo County Agriculture Departments.

Statistical highlights of the 1986 data base:

1. A total of 71,963 samples taken from 8,378 wells are recorded in the data base.
2. Samples have been collected and analyzed for pesticide residues in 53 of 58 California counties.
3. Pesticide residues were detected in wells in 23 counties.
4. Data were collected for 164 pesticide active ingredients and related chemicals (breakdown products and isomers). Of the 164 pesticides tested for, 16 were detected in well water (148, or 90 percent of those chemicals tested for were not detected).
5. DBCP, the most frequently sampled pesticide, was detected in 2,113 wells, or 92% of all wells with positive samples.
6. The geographical distribution of the sampling varied greatly between pesticides. For example, data for 1,2-D were available for 53 counties, whereas data for DBCP were available for only 26 counties.
7. Based on data confirmed to date, CDFA has concluded that nine of the 16 pesticides and related compounds detected in well water were present as a result of nonpoint source agricultural use: aldicarb, aldicarb sulfone (an aldicarb degradation product), atrazine, dibromochloropropane (DBCP), 1,2-dichloropropane (1,2-D), diuron, ethylene dibromide (EDB), prometon and simazine. CDFA has determined there is insufficient information to conclude

that alachlor, molinate, molinate sulfoxide, bromacil, carbofuran, dimethoate and malathion were present in well water as a result of nonpoint source agricultural use.

The 1985 and 1986 data bases are compared below.

	1985	1986
Total number of samples	10,000	71,963
Number of positive samples	3,952	5,104
Total number of wells sampled	approx. 5,000	8,376
Number of wells with positive samples	not available	2,303
Number of counties sampled	26	53
Number of counties with positive samples	15	23
Number of pesticides and related ingredients sampled for	34	164
Number of pesticides and related ingredients detected	11	16
Number of pesticides present as a result of nonpoint source agricultural use	5	9

While the number of samples in the data base increased more than 700 percent from 1985 to 1986, the number of positive samples increased only 29 percent. The ratio of positive to total samples decreased from one detection in every 2.5 samples in 1985 to one detection in every 14.2 samples in 1986. And while the number of pesticides and related ingredients sampled for increased almost 500 percent from 1985 to 1986, the number detected increased by less than 50 percent. A much more comprehensive picture of statewide sampling results in the 1986 data base shows the total number of pesticides detected in well water and the number of pesticides present in well water as a result of nonpoint source agricultural use do not appear to be increasing significantly.

Limitations on interpretation of the data:

1. Pesticide residue detections reported in the well inventory may not represent the true extent of ground water contamination in the state. Pesticides detected are limited to those sampled for. The data therefore indicate which pesticides are present in California well water among pesticides sampled, but not among all pesticides used statewide.
2. Sampling by agencies other than CDFA was not necessarily related to suspected agricultural nonpoint sources of contamination. Therefore it should not be assumed that all submitted results indicate the leaching potential of pesticides used in agriculture.
3. Geographically, most sampling has occurred in the San Joaquin Valley, in densely populated areas. Very little sampling has occurred in coastal counties or in rural areas, where wells are more likely to be in close proximity to agricultural fields. Because the amount of sampling varies widely from one area to the next, it may be inappropriate to conclude that certain areas are more sensitive to leaching than others based solely on information in the data base.

Despite these limitations, sampling information contained in the well inventory data base can be used in the following applications:

1. Modeling
2. Displaying the geographic distribution of well sampling
3. Displaying the geographic distribution of known pesticide contamination in wells
4. Identifying areas potentially sensitive to pesticide leaching
5. As a basis for study designs for future sampling.

Regulation of pesticides to prevent residues from entering well water as a result of agricultural use is difficult because scientific knowledge of how pesticides move to ground water is incomplete. Factors that contribute to ground water contamination by pesticides used in agriculture include use and method of application, irrigation practices, pesticide physical and chemical characteristics, soil type and climate. The roles these factors play in the contamination process are not fully understood.

Since 1979, when DBCP was discovered in California wells, the CDFA has taken several actions to prevent pesticides from migrating to ground water in California. The CDFA Environmental Hazards Assessment Program (EHAP) conducts environmental monitoring studies to identify actual and potential ground water contamination by agricultural pesticides. Ten such studies have been completed and eight are in progress. The CDFA Ground Water Protection Plan, a department-initiated program begun in 1984, seeks to improve regulatory decisions by providing estimates of the potential of a pesticide to enter ground water within specific geographical areas. The original well inventory data base was the first project of the Plan. In addition to considering potential for ground water contamination in its on-going pesticide registration and evaluation process, the CDFA has also begun implementing the PCPA (AB 2021).

The SWRCB has implemented several programs to identify, correct and prevent pesticide contamination of California ground water. Most of these programs were underway prior to the passage of the PCPA (AB 2021). They include the Priority Chemicals Program, the Pesticide Registration and Evaluation Program, the Ground Water Contamination Study, AB1803 Follow-Up Program, and the Ground Water "Hot Spots" Study. Regional Water Quality Control Boards have investigated and mitigated a number of ground water contamination incidents originating from point sources. In addition, the State and Regional Boards work with CDFA and County Agricultural Commissioners to mitigate problems of ground water contamination with pesticides resulting from nonpoint source agricultural use.

PREFACE

This report fulfills the requirements contained in Section 13152(e) of the Pesticide Contamination Prevention Act (Chapter 1298, Statutes of 1985). The Act directs the California Department of Food and Agriculture (CDFA) to report specified information on sampling for pesticide residues in California ground water to the Legislature, the California Department of Health Services (CDHS), and the State Water Resources Control Board (SWRCB) by December 1, 1986, and annually thereafter.

Parts I and II of this report were written by CDFA staff; SWRCB staff contributed Part III. As specified in the Act, the following items are addressed:

PART I:

* The number of wells sampled for pesticide active ingredients, the location of wells from which the samples were taken, well numbers (if available), and agencies responsible for drawing and analyzing the samples.
* The number of well samples with detectable levels of pesticide active ingredients, the location of the wells from which the samples were taken, and the agencies responsible for drawing and analyzing the samples.
* An analysis of the probable source of residues, considering factors such as the physical and chemical characteristics of the economic poison, volume of use and method of application, irrigation practices related to use, and types of soil in areas where the economic poison is applied.

PART II:

* Actions taken by the CDFA to prevent economic poisons from migrating to ground waters of the state.

PART III:

* Actions taken by the SWRCB to prevent economic poisons from migrating to ground waters of the state.

This report is a follow-up to the July, 1985 CDFA report, Agricultural Pesticide Residues in California Well Water: Development and Summary of a Well Inventory Data Base for NonPoint Sources, which summarized results of well water sampling for agricultural pesticide residues from 1975-1984 collected by the CDFA. Since last year, the data base has been updated to include results of sampling of large municipal water systems by the CDHS pursuant to AB 1803 (Chapter 881, Statutes of 1983), and results of monitoring by CDFA and other agencies for pesticide residues in ground water due to agricultural use from 1979 through August, 1986.

The results compiled from 1975-1984 include only a small amount of data on sampling due to apparent point sources, such as leakage from storage or waste sites. As sampling information pertaining to nonpoint sources is received from agencies that sample well water for pesticides, it will be included in subsequent reports.

Locations of sampling results are summarized in this report by county. In the data base, results are specified by well number, if available. The well number signifies township, range and section of the well sampled, locating it within one square mile units. However due to the high number of records contained in the data base (over 70,000), a listing of individual results by township, range and section is not feasible here.

December, 1986

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Finally, we thank the many individuals contributing their time and data whose efforts made this data base and report possible.

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I.

WELL INVENTORY DATA BASE

A. INTRODUCTION

The integrity of California's ground water has come under close scrutiny due to an increase in the number of pesticide residues found in well water throughout the country. Centralizing existing data is the first step in defining the extent of California's problem. The California Department of Food and Agriculture (CDFA) was therefore required by the Pesticide Contamination Prevention Act (PCPA, AB 2021), effective January 1,1986, to maintain a data base of sampling results for pesticides in California wells collected by state and local agencies. The PCPA also requires that data on the number and locations of wells sampled and wells with detectable levels of pesticides be reported annually to the State Legislature, the State Water Resources Control Board (SWRCB) and the Department of Health Services (CDHS).

Part I of this report fulfills these requirements. Results are presented for the number of wells sampled and the number of wells with positive detections for each county. General factors influencing pesticide movement through the soil to ground water are also discussed. A list of sampling and analyzing agencies included in the data base is presented in Appendix C.

Prior to enactment of the PCPA, increased concern over the discovery of pesticide residues in California well water led the CDFA to compile the Well Inventory data base, described in the July 1985 publication Agricultural Pesticide Residues in California Well Water: Development and Summary of a Well Inventory Data Base for Non-Point Sources. As a regulatory tool, the original data base focused on sampling results for pesticides suspected of originating from agricultural nonpoint sources. Data from 1975 to 1984 were collected from the CDFA, SWRCB, Regional Water Quality Control Boards (RWQCB), CDHS and the Fresno County Environmental Health Department and stored in a standard format.

To meet the requirements of the PCPA (AB2021), and to aid ground water protection research, this first annual report presents data from the 1985 data base, plus additional data from early 1984 to the present submitted this last year. Like all data in the 1985 data base, most of the recently collected data is from nonpoint source studies. However, as new sampling data are received, all results will be included in the data base and presented in future annual reports, regardless of contamination source.

B. MATERIALS AND METHODS

Collection

The same basic procedure was used in collecting data in 1986 as was used for the 1985 data base. Potential sources of sampling data were identified and contacted by telephone or letter. Contributing agencies to the 1986 data base are: The California Department of Food and Agriculture's Environmental Hazards Assessment Program, and Worker Health and Safety Branch; the California Departments of Health Services (Sanitary Engineering Branch), and Water Resources; the Regional Water Quality Control Boards, Regions 1,4, and 8; the State Water Resources Control Board; the City of Davis Public Works Department; the Fresno and San Mateo County Environmental Health Departments; and the Lake, Mendocino and Yolo County Agriculture Departments.

Data collection required a significant amount of CDFA staff time and inter-agency cooperation. Agencies supplied the data in either published reports, raw laboratory results, or on magnetic tape. It was necessary to request individual results when the data submitted had been summarized. The CDFA staff also traveled to agency offices either to obtain photocopies or to transcribe information directly onto computer coding sheets. Data from the CDHS statewide monitoring study required by AB 1803, Organic Chemical Contamination of Large Public Water Systems in California, April, 1986, were obtained in July, 1986 via magnetic tape.

AB 2021 requires that the CDFA, together with the SWRCB and CDHS, agree on minimum well sampling requirements for all results submitted to the CDFA. Since sampling requirements may restrict the amount of data received, the three agencies have instead agreed to narrow the requirements to minimum well sample reporting requirements.

The following minimum reporting requirements apply to samples taken after December 1,1986:

1. state well number (township/range/section/tract/sequence number/ base and meridian)
2. county
3. date of sample (month/day/year)
4. chemical analyzed
5. individual sample concentration, in parts per billion; not averaged values
6. minimum detectable limit, in parts per billion
7. sampling agency
8. analyzing lab
9. street name and number of actual well location
10. well type
11. sample type (e.g., initial or confirmational)
12. date of analysis (month/day/year)

Optional information to be included when available:

1. well depth (in feet)
2. method of analysis
3. top and bottom perforation depths of the well (in feet)
4. depth of standing water in the well at time of sampling (in feet)
5. year the well was drilled
6. whether driller's log has been located
7. known source of contamination

Explanations for these items are presented in Appendix B. The date of analysis, analyzing lab, method of analysis and sample type were not included in the 1985 data fields. As they are only required for samples taken after December 1, 1986, most records currently in the data base do not have values for these fields.

The PCPA (AB 2021) also requires all well sampling agencies to submit pesticide sampling data to the CDFA for inclusion into the data base. In August, 1986, CDFA notified federal and state agencies that sample well water for pesticide residues of this new state law. Agencies were requested to submit required data either on a suggested reporting form, on a form of their own, or on magnetic tape. These reporting requirements should significantly reduce CDFA staff time spent tracking and collecting data.

Evaluation

Pesticide sampling data collected by CDFA through 1985 were intended to represent results from nonpoint source agricultural use. Once collected, samples other than AB 1803 data were screened to determine if suspected contamination was from point or nonpoint sources, and from surface or ground water. Data that met the following specific criteria were included in the well inventory:

a. Samples had to be associated with a nonpoint source as opposed to a known point source. If the source of contamination was unknown, the data were still collected and included in the data base. The contamination source for these samples will be investigated.

b. Samples had to be taken as close to the well head as possible.

c. For domestic wells:

   1. Samples had to be obtained from an untreated and unfiltered system, because filtration or treatment could reduce or eliminate a chemical residue;

   2. To provide quality assurance among samples, the collection apparatus had to have been supplied by the sampling agency. Therefore, sampling results from owner-sampled wells were included when instructions on proper sampling materials and methods had been given to the well owner by an appropriate agency.

d. Location of each well sampled had to be minimally identified by township/range/section according to the U.S. Geological Survey's Public Lands Survey Coordinate System (Davis and Foote, 1966). This requirement enabled an evaluation of ground water contamination using other spatially-distributed data sets.

e. The data must not have been entered previously.

Data were verified as meeting these criteria either by analysis of reports or, in the case of unpublished laboratory results, by verbal confirmation from appropriate agency staff. Data that met the criteria were retained and coded into the proper format.

Only data other than AB 1803 data were evaluated based on the above criteria. Sources are largely unknown for AB 1803 data, which now represent the bulk of

data in the data base. Point sources of ground water contamination are discussed by the SWRCB in Section III.

Data Entry

For the 1985 data base, data were collected, evaluated and transcribed onto coding sheets. This information was entered onto floppy disk storage on an Apple II microcomputer at CDFA headquarters in Sacramento. These stored files were then proofread against the coding sheets, and edited as necessary. Individual files were transferred for storage to a PDP 11/23+ minicomputer in Riverside, CA.

The same data entry procedure was used for the 1986 data base. This year however, data were transferred from the PDP 11/23+ in Riverside to a PRIME computer (9750 model) at CDFA headquarters in Sacramento. After the new files were checked with verification programs conducted on the PRIME computer, the data were entered into the SIR (Scientific Information Retrieval) Data Base Management System, where statistical analyses of data and generation of tables were performed. Data for the 1987 report will be entered directly into the PRIME computer in Sacramento.

Verification programs have been added to the data base management system to insure the integrity of the data. Verification is performed on all new data before inclusion into the main file to check for:

(1) Township/range/section (T/R/S) verification: The townships, ranges, and sections in each county were coded and entered into a computer file. A program was written that compares this file to well sampling records to be included in the data base. Errors are noted and corrected.
(2) Column verification: A program was written that compares all allowed values for each column to the actual entered values in each column and notes any errors for each line. These errors are inspected and corrected.

The purpose of the original data base was to determine where sampling for pesticides used in agriculture had occurred and where residues in ground water due to agricultural use were present. The objective was enlarged with the PCPA (AB 2021) to also provide an absolute count of the number of contaminated vs. non-contaminated wells. This new requirement introduced the need for identifying individual wells from which samples were taken, as opposed to a simple recording of all sampling results.

To meet this need, complete state well numbers have since been included. The Department of Water Resoures (DWR) is responsible for assigning these numbers.

Format of the Data Base

Each chemical analysis for a pesticide residue in a well water sample constitutes one record in the data base. Each record contains 132 columns of data. An explanation of the format for each record appears in Appendix B. Codes are listed in Appendix C.

C. RESULTS

1986 Data

The primary unit of analysis in the well inventory data base is a record. Each record represents one chemical analysis (or sample result) for one specific pesticide or related chemical in one well water sample. In 1985, results were reported by record only, since a lack of complete state well numbers prevented reporting results by individual well. All records in the data base have since been assigned unique well numbers (to the extent possible) so that 1986 results may also be reported by well.

Results presented in this 1986 report are summarized in 3 ways: (1) by pesticide active ingredient, showing which pesticides were sampled for and which were detected; (2) by county, indicating where sampling occurred and where pesticides were detected and (3) by year, indicating when pesticides were sampled and detected.

The well inventory data base does not represent all well sampling that has occurred in the state because:

a) only sampling results for pesticide residues are included;
b) only sampling results from cooperating public agencies are included to date;
c) excluding AB 1803 data, sampling results from suspected point sources and data that do not otherwise meet the CDFA evaluation criteria have been excluded from the data base to date.

Further, detections reported in the well inventory may not represent the true extent of ground water contamination. The data merely indicate which pesticides are present in California well water among pesticides sampled for in the areas where samples were taken, but not among all pesticides used statewide.

RESULTS BY PESTICIDE

Sampling Distribution

Information on 164 pesticide active ingredients and related chemicals analyzed in 71,963 samples taken from 8,376 wells is stored in the data base. Table 1 summarizes the number of counties with positive results and the total number of counties sampled for each pesticide included in the 1986 data base; Table 2 displays the total number of positive and negative results per well and sample. As shown in the two tables, sampling frequency varies greatly between pesticides.

For example, well water has been sampled most extensively for 1,2-D and DBCP (3,175 wells in 53 counties and 5,288 wells in 26 counties, respectively), while other chemicals, such as prometon, have been sampled for less frequently (120 wells in only two counties). Nine of the 164 pesticides were sampled for in more than 1,000 wells; 80 pesticides (49%) were sampled for in fewer than 100 wells. Seventy-six pesticides (46%) were sampled for in 100 to 1,000 wells. This variance in sampling distribution prohibits our presenting a complete picture of California's ground water quality as impacted by the agricultural use of pesticides.

Table 1. Summary by pesticide or related chemical of counties with positive sample results compared with the total number of counties sampled.

PESTICIDE	COUNTIES WITH POSITIVE RESULTS	TOTAL COUNTIES
1,2-D	8	53
1,3-D	0	52
2,4,5-T	0	4
2,4-D	0	46
4-CLOC	0	1
BHC (all isomers)	0	38
D-D mix	1	4
DBCP	15	26
DCPA	0	17
DDD	0	38
DDE	0	38
DDT	0	38
DDVP	0	3
DEF	0	14
DNOC	0	12
EDB	6	22
EPN	0	3
EPTC	0	13
MCPA (no salt)	0	1
MCPA, dimethylamine salt	0	10
MCPB,sodium salt	0	4
PCNB	0	18
PCP	0	42

Table 1. (continued)

PESTICIDE	COUNTIES WITH POSITIVE RESULTS	TOTAL COUNTIES
acephate	0	25
acrolein	0	4
alachlor	1	24
aldicarb	1	33
aldicarb sulfone	1	1
aldrin	0	38
ametryn	0	12
aminocarb	0	4
amitraz	0	1
amitrole	0	1
atraton	0	10
atrazine	4	31
azinophos-ethyl	0	2
azinophos-methyl	0	34
bendiocarb	0	1
benefin	0	11
benomyl	0	31
bensulide	0	1
bentazon	0	1
bromacil	1	18
bufencarb	0	1
butylate	0	2

Table 1. (continued)

PESTICIDE	COUNTIES WITH POSITIVE RESULTS	TOTAL COUNTIES
captan	0	34
carbaryl	0	41
carbendazim	0	23
carbofuran	1	33
carbophenothion	0	7
chlordane	0	38
chlordecone	0	2
chlordimeform	0	8
chloroallyl alcohol (cis/trans)	0	3
chlorobenzilate	0	2
chloropicrin	0	28
chlorothalonil	0	24
chlorpropham	0	11
chlorpyrifos	0	26
creosote	0	2
cyanazine	0	11
cycloate	0	2
dalapon	0	1
demeton	0	41
diazinon	0	26
dicamba	0	6
dicofol	0	28
dicrotophos	0	2

Table 1. (continued)

PESTICIDE	COUNTIES WITH POSITIVE RESULTS	TOTAL COUNTIES
dieldrin	0	38
dimethoate	1	31
dinoseb	0	29
dioxacarb	0	1
dioxathion	0	3
diphenamid	0	18
disulfoton	0	33
diuron	1	25
endosulfan	0	42
endosulfan sulfate	0	39
endothall	0	18
endrin	0	48
endrin aldehyde	0	38
ethion	0	24
ethyl alcohol	0	1
ethylan	0	2
fenamiphos	0	18
fenamiphos sulfone	0	1
fenamiphos sulfoxide	0	1
fenbutatin-oxide	0	1
fenvalerate	0	1
fluchloralin	0	5

Table 1. (continued)

PESTICIDE	COUNTIES WITH POSITIVE RESULTS	TOTAL COUNTIES
formaldehyde	0	2
glyphosate	0	9
heptachlor	0	38
heptachlor epoxide	0	38
hexachlorobenzene	0	38
hexazinone	0	2
lindane (gamma-BHC)	0	48
malaoxon	0	1
malathion	0	22
maneb	0	20
merphos	0	2
methamidophos	0	22
methidathion	0	4
methiocarb	0	4
methomyl	0	32
methoxychlor	0	37
methyl bromide	0	49
methyl parathion	0	17
methylene chloride	0	1
metolachlor	0	3
mevinphos	0	15
mirex	0	3
molinate	2	18

Table 1. (continued)

PESTICIDE	COUNTIES WITH POSITIVE RESULTS	TOTAL COUNTIES
molinate sulfoxide	1	17
monocrotophos	0	2
naled	0	4
napropamide	0	6
nitrofen	0	2
oryzalin	0	5
ovex	0	1
oxamyl	0	17
oxydemeton-methyl	0	1
paraquat	0	38
parathion	0	15
pendimethalin	0	1
permethrin (cis and trans)	0	8
phorate	0	24
phosalone	0	9
phosmet	0	5
phosphamidon	0	1
profluralin	0	2
promecarb	0	1
prometon	1	2
prometryn	0	24
propargite	0	13

Table 1. (continued)

PESTICIDE	COUNTIES WITH POSITIVE RESULTS	TOTAL COUNTIES
propazine	0	12
propham	0	12
propoxur	0	4
propyzamide	0	9
pyrethrins	0	2
ronnel	0	2
screen (carbamate)	0	2
screen (chlorinated hydrocarbon)	0	4
screen (organophosphate)	0	5
screen (triazine)	0	1
silvex	0	36
simazine	7	36
simetryn	0	13
sodium chlorate	0	2
terbacil	0	1
terbutryn	0	12
tetrachlorvinphos	0	1
tetradifon	0	6
thanite	0	1
thiobencarb	0	17
thiobencarb sulfoxide	0	17
toxaphene	0	48
triadimefon	0	2

Table 1. (continued)

PESTICIDE	COUNTIES WITH POSITIVE RESULTS	TOTAL COUNTIES
trichloronate	0	1
trichlorophon	0	10
trifluralin	0	8
vernolate	0	1
zineb	0	1
ziram	0	25

Table 2. Comparison of the number of wells sampled with the number of samples taken for pesticides and their related chemicals, grouped into positive, negative and total categories.

	NO. OF WELLS / NO. OF SAMPLES		
PESTICIDE	POSITIVE	NEGATIVE	TOTAL
1,2-D	64/ 316	3111/4806	3175/5122
1,3-D	0/ 0	3051/4142	3051/4142
2,4,5-T	0/ 0	17/ 18	17/ 18
2,4-D	0/ 0	909/ 945	909/ 945
4-CLOC	0/ 0	1/ 1	1/ 1
BHC (all isomers)	0/ 0	791/1677	791/1677
D-D mix	1/ 1	12/ 18	13/ 19
DBCP	2113/4201	3175/3907	5288/8108
DCPA	0/ 0	352/ 358	352/ 358
DDD	0/ 0	863/ 903	863/ 903
DDE	0/ 0	862/ 903	862/ 903
DDT	0/ 0	867/ 911	867/ 911
DDVP	0/ 0	12/ 12	12/ 12
DEF	0/ 0	261/ 262	261/ 262

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DNOC	0/ 0	268/ 268	268/ 268
EDB	27/ 40	937/1026	964/1066
EPN	0/ 0	10/ 10	10/ 10
EPTC	0/ 0	269/ 270	269/ 270
MCPA (no salt)	0/ 0	1/ 1	1/ 1
MCPA, dimethylamine salt	0/ 0	70/ 71	70/ 71
MCPB,sodium salt	0/ 0	10/ 10	10/ 10
PCNB	0/ 0	165/ 167	165/ 167
PCP	0/ 0	775/ 891	775/ 891
acephate	0/ 0	418/ 426	418/ 426
acrolein	0/ 0	9/ 11	9/ 11
alachlor	1/ 1	429/ 433	430/ 434
aldicarb	30/ 225	451/ 572	481/ 797
aldicarb sulfone	1/ 1	2/ 2	3/ 3

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
aldrin	0/ 0	798/ 831	798/ 831
ametryn	0/ 0	51/ 52	51/ 52
aminocarb	0/ 0	14/ 14	14/ 14
amitraz	0/ 0	1/ 1	1/ 1
amitrole	0/ 0	3/ 3	3/ 3
atraton	0/ 0	39/ 41	39/ 41
atrazine	74/ 144	838/ 925	912/1069
azinophos-ethyl	0/ 0	6/ 6	6/ 6
azinophos-methyl	0/ 0	616/ 625	616/ 625
bendiocarb	0/ 0	8/ 8	8/ 8
benefin	0/ 0	199/ 199	199/ 199
benomyl	0/ 0	495/ 502	495/ 502
bensulide	0/ 0	3/ 3	3/ 3
bentazon	0/ 0	2/ 2	2/ 2

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES		
	POSITIVE	NEGATIVE	TOTAL
bromacil	2/ 5	569/ 577	571/ 582
bufencarb	0/ 0	8/ 8	8/ 8
butylate	0/ 0	9/ 9	9/ 9
captan	0/ 0	712/ 719	712/ 719
carbaryl	0/ 0	798/ 804	798/ 804
carbendazim	0/ 0	212/ 215	212/ 215
carbofuran	1/ 1	679/ 683	680/ 684
carbophenothion	0/ 0	32/ 33	32/ 33
chlordane	0/ 0	869/ 911	869/ 911
chlordecone	0/ 0	2/ 2	2/ 2
chlordimeform	0/ 0	182/ 182	182/ 182
chloroallyl alcohol (cis/trans)	0/ 0	11/ 45	11/ 45
chlorobenzilate	0/ 0	9/ 9	9/ 9
chloropicrin	0/ 0	795/ 806	795/ 806

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
chlorothalonil	0/ 0	488/ 492	488/ 492
chlorpropham	0/ 0	260/ 262	260/ 262
chlorpyrifos	0/ 0	484/ 490	484/ 490
creosote	0/ 0	4/ 4	4/ 4
cyanazine	0/ 0	262/ 307	262/ 307
cycloate	0/ 0	9/ 9	9/ 9
dalapon	0/ 0	14/ 14	14/ 14
demeton	0/ 0	931/ 961	931/ 961
diazinon	0/ 0	289/ 294	289/ 294
dicamba	0/ 0	33/ 34	33/ 34
dicofol	0/ 0	733/ 740	733/ 740
dicrotophos	0/ 0	9/ 9	9/ 9
dieldrin	0/ 0	797/ 833	797/ 833
dimethoate	1/ 1	611/ 625	612/ 626

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dinoseb	0/ 0	571/ 577	571/ 577
dioxacarb	0/ 0	8/ 8	8/ 8
dioxathion	0/ 0	17/ 17	17/ 17
diphenamid	0/ 0	420/ 421	420/ 421
disulfoton	0/ 0	502/ 509	502/ 509
diuron	9/ 24	719/ 738	728/ 762
endosulfan	0/ 0	1230/2782	1230/2782
endosulfan sulfate	0/ 0	920/ 994	920/ 994
endothall	0/ 0	298/ 300	298/ 300
endrin	0/ 0	1282/1567	1282/1567
endrin aldehyde	0/ 0	790/ 823	790/ 823
ethion	0/ 0	226/ 230	226/ 230
ethyl alcohol	0/ 0	1/ 1	1/ 1
ethylan	0/ 0	10/ 10	10/ 10

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
fenamiphos	0/ 0	275/ 282	275/ 282
fenamiphos sulfone	0/ 0	3/ 3	3/ 3
fenamiphos sulfoxide	0/ 0	3/ 3	3/ 3
fenbutatin-oxide	0/ 0	1/ 1	1/ 1
fenvalerate	0/ 0	1/ 1	1/ 1
fluchloralin	0/ 0	165/ 165	165/ 165
formaldehyde	0/ 0	4/ 4	4/ 4
glyphosate	0/ 0	35/ 36	35/ 36
heptachlor	0/ 0	843/ 882	843/ 882
heptachlor epoxide	0/ 0	844/ 876	844/ 876
hexachlorobenzene	0/ 0	741/ 762	741/ 762
hexazinone	0/ 0	4/ 4	4/ 4
lindane (gamma-BHC)	0/ 0	1375/1701	1375/1701
malaoxon	0/ 0	1/ 1	1/ 1

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES		
	POSITIVE	NEGATIVE	TOTAL
malathion	0/ 0	168/ 172	168/ 172
maneb	0/ 0	268/ 274	268/ 274
merphos	0/ 0	138/ 138	138/ 138
methamidophos	0/ 0	373/ 381	373/ 381
methidathion	0/ 0	50/ 51	50/ 51
methiocarb	0/ 0	14/ 14	14/ 14
methomyl	0/ 0	714/ 719	714/ 719
methoxychlor	0/ 0	834/ 851	834/ 851
methyl bromide	0/ 0	2862/4462	2862/4462
methyl parathion	0/ 0	170/ 174	170/ 174
methylene chloride	0/ 0	1/ 1	1/ 1
metolachlor	0/ 0	48/ 48	48/ 48
mevinphos	0/ 0	167/ 171	167/ 171
mirex	0/ 0	19/ 19	19/ 19

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
molinate	2/ 16	265/ 355	267/ 371
molinate sulfoxide	2/ 3	210/ 287	212/ 290
monocrotophos	0/ 0	9/ 9	9/ 9
naled	0/ 0	31/ 31	31/ 31
napropamide	0/ 0	172/ 180	172/ 180
nitrofen	0/ 0	11/ 11	11/ 11
oryzalin	0/ 0	174/ 182	174/ 182
ovex	0/ 0	2/ 2	2/ 2
oxamyl	0/ 0	362/ 364	362/ 364
oxydemeton-methyl	0/ 0	2/ 2	2/ 2
paraquat	0/ 0	589/ 597	589/ 597
parathion	0/ 0	83/ 103	83/ 103
pendimethalin	0/ 0	2/ 2	2/ 2
permethrin (cis and trans)	0/ 0	156/ 305	156/ 305

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
phorate	0/ 0	393/ 398	393/ 398
phosalone	0/ 0	48/ 49	48/ 49
phosmet	0/ 0	17/ 18	17/ 18
phosphamidon	0/ 0	2/ 2	2/ 2
profluralin	0/ 0	11/ 11	11/ 11
promecarb	0/ 0	8/ 8	8/ 8
prometon	8/ 16	112/ 123	120/ 139
prometryn	0/ 0	374/ 420	374/ 420
propargite	0/ 0	220/ 221	220/ 221
propazine	0/ 0	52/ 53	52/ 53
propham	0/ 0	232/ 233	232/ 233
propoxur	0/ 0	14/ 14	14/ 14
propyzamide	0/ 0	179/ 179	179/ 179
pyrethrins	0/ 0	9/ 9	9/ 9

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
ronnel	0/ 0	9/ 9	9/ 9
screen (carbamate)	0/ 0	61/ 61	61/ 61
screen (chlorinated hydrocarbon)	0/ 0	65/ 68	65/ 68
screen (organophosphate)	0/ 0	67/ 69	67/ 69
screen (triazine)	0/ 0	1/ 1	1/ 1
silvex	0/ 0	688/ 711	688/ 711
simazine	57/ 109	1228/1355	1285/1464
simetryn	0/ 0	52/ 53	52/ 53
sodium chlorate	0/ 0	9/ 9	9/ 9
terbacil	0/ 0	3/ 3	3/ 3
terbutryn	0/ 0	51/ 59	51/ 59
tetrachlorvinphos	0/ 0	2/ 2	2/ 2
tetradifon	0/ 0	54/ 54	54/ 54
thanite	0/ 0	1/ 1	1/ 1

Table 2. (continued)

PESTICIDE	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
thiobencarb	0/ 0	226/ 300	226/ 300
thiobencarb sulfoxide	0/ 0	163/ 189	163/ 189
toxaphene	0/ 0	1488/1843	1488/1843
triadimefon	0/ 0	9/ 16	9/ 16
trichloronate	0/ 0	1/ 1	1/ 1
trichlorophon	0/ 0	124/ 128	124/ 128
trifluralin	0/ 0	26/ 26	26/ 26
vernolate	0/ 0	2/ 2	2/ 2
zineb	0/ 0	10/ 10	10/ 10
ziram	0/ 0	236/ 238	236/ 238
TOTAL SAMPLE RESULTS	5104	66859	71963

Detections

Sixteen (10%) of the 164 active ingredients and related chemicals included in the data base were detected in well water, while 148 (90%) were never detected. Of these 16 pesticides, nine have been determined to be present as a result of agricultural use (DBCP, 1,2-D, atrazine, simazine, aldicarb and aldicarb sulfone, EDB, diuron, and prometon). The alachlor, molinate and molinate sulfoxide detections have been determined to be the result of faulty well construction, and not the result of agricultural use. The bromacil detected is considered to be from a point source. The initial DD mix and dimethoate detections were not confirmed, and therefore no agricultural use determination was made. A source determination could not be made for the single carbofuran detection.

Pesticide residues were detected in 2,303 wells, in a total of 5,104 well water samples. DBCP alone accounts for 92% (2,113) of all positive wells (wells with one or more positive samples), and 82% (4,201) of all positive samples. The next most frequently detected pesticides are atrazine, 1,2-D, simazine, aldicarb and EDB which account for 3.2, 2.8, 2.5, 1.3 and 1.2% of all positive wells, respectively (Table 3). The remaining ten detected pesticides each account for less than 1% of all positive wells. Figure 1 shows the statewide distribution of the eight most frequently detected pesticides. As shown in the Figure, six of the eight pesticides were detected in the agricultural region of the the San Joaquin Valley.

Table 4 displays the range in the number of positive wells between pesticides and also shows that those pesticides most frequently detected are not always among those pesticides most often sampled for. DBCP and 1,2-D are exceptions, in that 40% of all sampled wells contained DBCP residues and 2% contained 1,2-D residues. The four other most frequently sampled for pesticides (1,3-D, methyl bromide, toxaphene and lindane) have never been detected in a well as a result of nonpoint, agricultural use.

This discrepancy between most detected and most sampled pesticides is possibly a result of differences between study designs. For example, intensive sampling in an area known to have a problem could result in a high number of detections, but in a low number of records relative to the number of records in the entire data

Table 3. Relative number of positive wells for each pesticide or related chemical detected in well water expressed as a percentage of total positive wells for all pesticides in the 1986 well inventory data base.

PESTICIDE	POSITIVE WELLS AS PERCENTAGE OF TOTAL POSITIVE WELLS[1]
DBCP	91.75
atrazine	3.21
1,2-D	2.78
simazine	2.48
aldicarb	1.30
EDB	1.17
diuron	0.39
prometon	0.35
bromacil	0.09
molinate	0.09
molinate sulfoxide	0.09
alachlor	0.04
aldicarb sulfone	0.04
carbofuran[2]	0.04
D-D mix[2,3]	0.04
dimethoate[2]	0.04

[1] In some cases, water from a single well contained residues for more than one pesticide.
[2] Detection for this pesticide has not been confirmed.
[3] This product is a mixture of 1,2-D and 1,3-D; it is not known which of the two active ingredients was detected.

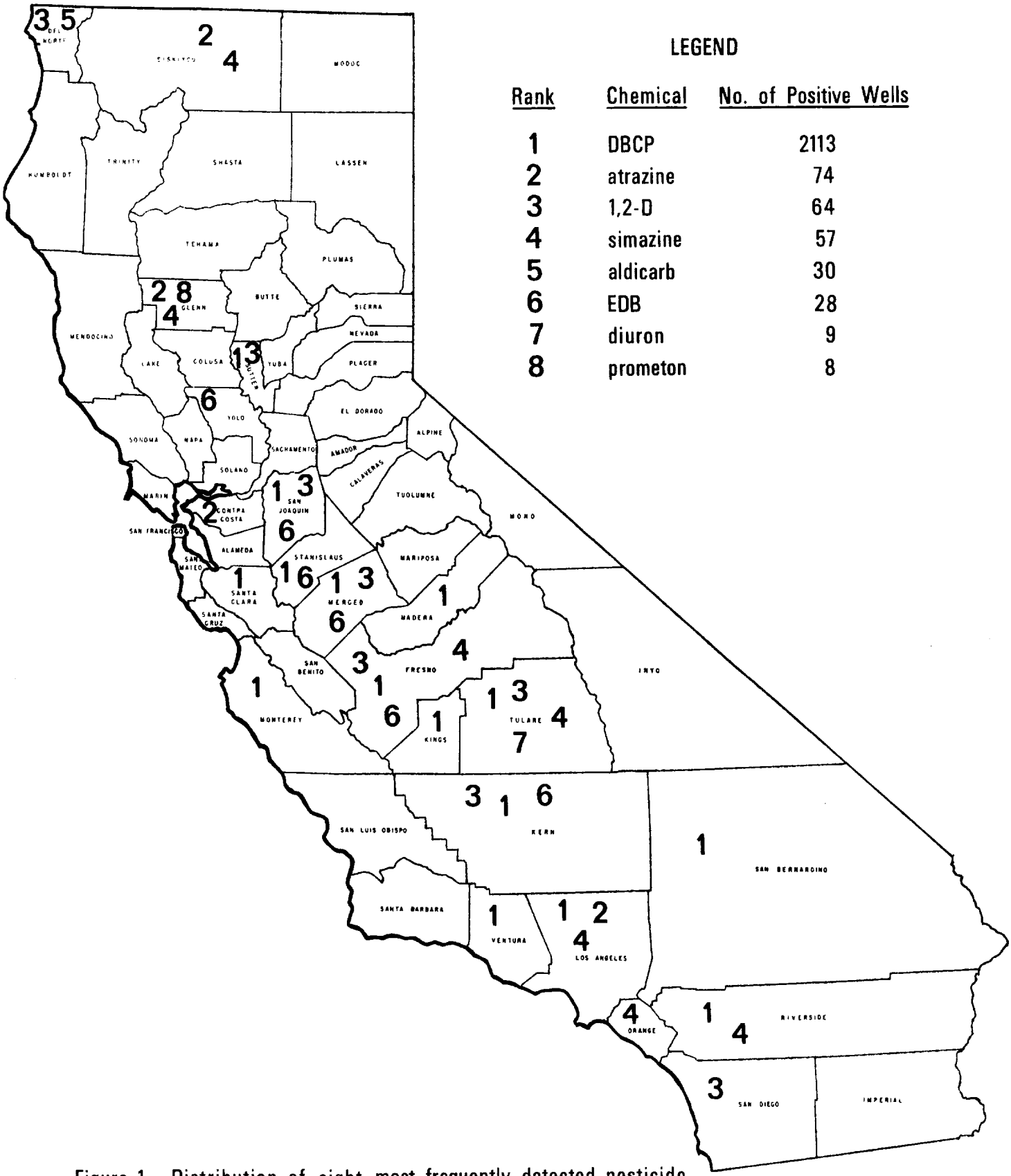

Figure 1. Distribution of eight most frequently detected pesticide residues in well water in California counties, 1975-1986.

Table 4. Six most frequently occurring compounds with respect to the number of positive wells and the total number of wells sampled.

PESTICIDE	NUMBER OF POSITIVE WELLS	PESTICIDE	TOTAL NUMBER OF POSITIVE AND NEGATIVE WELLS
DBCP	2113	DBCP	5288
atrazine	74	1,2-D	3175
1,2-D	64	1,3-D[1]	3051
simazine	57	methyl bromide[1]	2862
aldicarb	30	toxaphene[1]	1488
EDB	27	lindane[1]	1375

[1]No residues were found in well water sampled for these pesticides.

base. On the other hand, sampling over a large area with no known problem could result in a larger number of records, but in a lower number of detections. Specific examples of this occurrence are studies for aldicarb in Del Norte County, and 1,3-D sampling throughout the San Joaquin Valley. In the Del Norte study, 47 wells were intensively monitored in a small area of similar soil type and climatic conditions. The relative number of wells sampled was low, but the number of wells with positive detections was high (30). Aldicarb was also sampled for in 434 other wells in 32 counties, but has only been detected in wells in Del Norte County. In the case of 1,3-D, 3,051 wells were sampled in 52 counties, but no residues were detected in any of these wells.

Because of the uneven sampling distribution for all pesticides statewide, it is not possible to compare each pesticide's potential to leach through soil to ground water based solely on results from this data base.

Status of Detected Pesticides

The following section describes the status of each detected pesticide in the 1986 well inventory data base.

Although the nematicide DBCP was officially suspended from use in 1979, DBCP residues are still being detected in wells. DBCP has been found in 2,113 wells located in 15 counties sampled between the years 1979 to 1986. Agricultural applications are considered to be the source of the DBCP residues found in well water. DBCP was typically applied to crops by adding it directly into irrigation water. It has been suggested that many wells were contaminated when back siphoning occurred (when a well pump accidently shuts off and the water siphons back down into the well supplying the irrigation water). Back siphoning devices are now required on irrigation systems to prevent this direct source of contamination. The CDHS is conducting ongoing monitoring for DBCP and taking measures to mitigate the problem of DBCP residues in well water.

Low levels of atrazine residues have been found in water from 74 of 912 total wells sampled. The positive wells were located in four of the 30 counties in which wells were sampled. All residues were below the action level of 15 ppb as established by the CDHS. Thirty-eight of the positive wells were detected through AB 1803 monitoring; the source of the atrazine residues is unknown. A

study conducted by the CDFA in Glenn County detected atrazine residues in 36 wells. (Report in progress.) The use of atrazine to kill roadside weeds has been suggested as the probable agricultural nonpoint source for these findings. Atrazine has been entered into the review process specified in Section 13149 of the PCPA (AB 2021).

The compound 1,2-D has been sampled for in 3,175 wells in 53 counties, and found to be present at low levels in 64 wells in 8 counties (Tables 1 and 2). There are also 19 samples from 13 wells recorded in the data base for the pesticide product DD Mix, composed of 1,2-D and 1,3-D. The results reported were not separated out into the two active ingredients, and were therefore recorded only as DD mix. Thus, it is impossible to attribute the one unconfirmed positive result to either active ingredient. This inaccuracy will be avoided in the future. The production of DD Mix was stopped in 1984. The only remaining registered product containing 1,2-D is Telone. The percentage of 1,2-D in Telone is now limited to less than .5% of active ingredients. We are considering all positive results for 1,2-D to be from a nonpoint agricultural source.

Low levels of simazine have been found in 57 wells in seven counties, out of 1,285 wells sampled in 35 counties. All residues are below the 150 ppb action level set by the CDHS. Results from Los Angeles, Orange, Riverside and Siskiyou Counties are from AB 1803 monitoring; the source for the simazine residues is unknown. The other 31 wells with detectable residues were found in sampling studies conducted by the CDFA. Agricultural source determination is in progress for the 17 positive wells in Glenn County and 10 in Tulare County. Two wells in Fresno County and two in Riverside County found positive in a 1982 CDFA sampling study are considered to be from an agricultural, nonpoint source. Simazine has been entered into the PCPA (AB 2021) Section 13149 review process.

Aldicarb has been found in 30 wells in Del Norte County, out of 481 sampled wells in 33 counties. Physical factors such as soil temperature, amount of annual precipitation and other soil conditions apparently inhibit leaching in other areas of the state. Its use has been suspended in Del Norte County. Union Carbide, the manufacturer of the product, has offered to provide effective filters, or to pay the cost of hookup to the Smith River Water District, to households with aldicarb levels in their wells that are above state action

levels. The contamination of these wells has been determined to be from the agricultural use of aldicarb in lily bulb fields in that area.

EDB has been found in 27 wells in 6 counties out of 964 wells sampled in 22 counties. We have determined the source to be from agricultural use, as sampling was conducted in areas of known EDB use. The U.S. E.P.A. suspended all EDB registrations for U.S. uses in September, 1984. The CDHS is conducting ongoing monitoring for EDB in wells in areas where the pesticide has been detected.

Diuron residues have been found in nine wells in Tulare County, out of 728 sampled wells in 24 counties. The residues were detected in a CDFA sampling study (report in progress). We are considering agricultural use on citrus and alfalfa to be the source. Although an action level for diuron has not yet been established by the CDHS, it has been entered into the PCPA (AB 2021) review process.

Prometon has been detected in eight wells in Glenn County, out of 120 wells sampled in two counties. The source of prometon appears to be use as a soil sterilant under roadbeds.

Molinate has been found in two wells in two counties, out of 268 sampled wells in 17 counties. One positive well in Yolo County may be due to defective well construction, as the well, located 15 feet from a rice field, also contained high levels of bacteria. The other positive well in Tehama County (which also had a positive result for molinate sulfoxide), appears to have been an isolated incident, as subsequent sampling of 23 surrounding wells had no detectable residues. According to the Central Valley RWQCB, Redding Office, this well has since been abandoned, as a protective seal had never been installed in the well to prevent contamination from any compound. A new well has been dug to replace it. The abandoned well was down gradient from a rice field that had a visible gravel lens, so that molinate percolated through, and flowed into, the lower level field and into the unprotected well.

Alachlor has been detected in one well in Yolo County, out of 430 sampled wells in 24 counties. This well has also been found to contain residues of EDB, metolachlor and simazine. (The sampling results for the metolachlor and simazine detections have not yet been received or entered into the data base.) The

alachlor residues detected have been attributed to faulty well construction, and not to agricultural use. Since the installation of a granular-activated carbon filter unit in the well, no further pesticide residues have been detected.

Bromacil has been sampled for in 571 wells in 18 counties, and has been detected in two monitoring wells installed near a toxic chemical waste site in Sutter County. We consider these positive finds to be from a point source. A recent CDFA well sampling study has found bromacil in wells in Tulare County, but the report is in progress and results have not yet been entered into the inventory. Bromacil has been entered into the PCPA (AB 2021) review process. No action level has yet been established for it by the CDHS.

Carbofuran was detected in one well in Riverside County, out of 680 wells sampled in 33 counties. The source for this carbofuran detection remains unknown, as no record of carbofuran use within a five mile radius of the well could be found.

Dimethoate was detected initially but not confirmed in two wells in two counties, out of 613 sampled wells in 31 counties. One initial positive result detected in a well in Riverside County by the AB 1803 monitoring survey was never confirmed; its source is unknown. The other initial positive detection was in Yolo County; the second or confirmation sample was negative. No source determination was made as the detection was not confirmed.

Malathion was detected initially but not confirmed in one well in Yolo County, out of 169 sampled wells in 22 counties. The subsequent confirmation sample was negative. The well in question was the same well in Yolo County in which an initial dimethoate sample had been detected, but not confirmed. No further action has been taken, as the initial sample was not confirmed.

According to staff of the RWQCBs, data which they have collected consist almost solely of point source detections. Mitigation measures and necessary monitoring for these chemicals and point source sites are under the jurisdiction of the SWRCB. It is hoped that with the passage of the PCPA (AB 2021), interagency cooperation betweeen the CDFA, SWRCB, and CDHS will increase in regard to monitoring studies and data exchange.

The status of pesticides detected in ground water and determined to be present as a result of agricultural use is summarized in Table 9 (pg. 71).

RESULTS BY COUNTY

Total Number of Samples

Approximately 8,376 wells have been sampled for pesticides in 53 counties. Table 5 presents the total number of wells and samples per county, and the number of wells with positive and negative results per county. It is interesting to note that although Fresno County had the largest number of wells sampled in the state (2,964 wells or 35.4% of all wells in the data base), it accounts for only 9.8% of all sampling results. In contrast, only 554 wells (6.6% of total wells sampled) were sampled in Los Angeles County, but because these wells were sampled for a greater number of pesticides and more frequently, the sampling results totalled 25.4% of all results in the data base. Other counties, like Marin and Modoc Counties, have had very little monitoring (12 and 3 wells sampled, respectively). The significance of the number of wells sampled and the frequency of positive pesticide detections per county must be weighed against the amount of agriculture, and therefore the amount of pesticide use occurring in each county.

The number of pesticides sampled and the number of samples taken varied between counties because sampling programs differed in design and area encompassed. Wells in Riverside and San Bernardino Counties were sampled for the largest number of pesticides (112 and 96, respectively); most (43) counties were sampled for fewer than 70 pesticides (Table 6). A tabular summary of pesticides sampled in each county appears in Appendix D.

Detections

As shown in Table 5, positive results were found in 23 of the 53 counties where sampling was conducted. Fresno County had the highest number of positive wells (1,376); Merced County had the second highest (282). Stanislaus and Tulare Counties had 115 and 108 positive wells, respectively.

A maximum of four pesticides have been detected in any one county, regardless of the total number of pesticides sampled for (Table 6). For example, Riverside,

San Bernardino, Tulare and Fresno Counties were sampled for 112, 96, 94 and 86 individual pesticides, respectively, but none of these counties had more than four pesticides detected.

DBCP was the most frequently detected pesticide in counties with positive wells. For example, of the 1,376 positive wells in Fresno County, 1,374 were positive for DBCP. This same ratio of positive DBCP wells to positive wells also occurred in Kings (6/6), Merced (275/282), Riverside (32/35), San Bernardino (64/64), San Joaquin (85/93), Stanislaus (113/115), Sutter (11/14), and Tulare (97/108) Counties. Monterey, Santa Clara and Ventura Counties each had one contaminated well and DBCP was the detected pesticide in each one.

Figure 2 is a map of pesticide sampling in California wells. A dot represents at least one positive detection for that county. Figure 3 is a more detailed map showing each township with at least one positive detection; only positive data from the 1985 data base, AB 1803 results, DBCP sampling in Southern California, and the CDFA Glenn County sampling study are represented.

Table 5. Summary by county showing the number of wells and the number of samples in the 1986 well inventory data base, grouped into positive, negative and total categories with a comparison of the total number of wells and the total number of samples for each county as a percent of the state total.

	NO. OF WELLS / NO. OF SAMPLES			
COUNTY	POSITIVE	NEGATIVE	TOTAL	PERCENT OF STATE TOTAL
Alameda	0/ 0	31/ 545	31/ 545	.37/ .76
Amador	0/ 0	8/ 34	8/ 34	.10/ .05
Butte	0/ 0	91/ 954	91/ 954	1.09/ 1.33
Calavaras	0/ 0	3/ 15	3/ 15	.04/ .02
Colusa	0/ 0	51/ 288	51/ 288	.61/ .40
Contra Costa	1/ 1	55/ 417	56/ 418	.67/ .58
Del Norte	41/ 497	7/ 333	48/ 830	.57/ 1.15
El Dorado	0/ 0	12/ 60	12/ 60	.14/ .08
Fresno	1375/2420	1588/ 4614	2963/ 7034	35.37/ 9.77
Glenn	46/ 124	133/ 1157	179/ 1281	2.14/ 1.78
Humboldt	0/ 0	14/ 109	14/ 109	.17/ .15
Imperial	0/ 0	2/ 37	2/ 37	.02/ .05
Inyo	0/ 0	8/ 78	8/ 78	.10/ .11

Table 5. (continued)

COUNTY	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL	PERCENT OF STATE TOTAL
Kern	70/ 196	312/ 2443	382/ 2639	4.56/ 3.67
Kings	6/ 6	48/ 571	54/ 577	.64/ .80
Lake	0/ 0	8/ 53	8/ 53	.10/ .07
Lassen	0/ 0	9/ 161	9/ 161	.11/ .22
Los Angeles	38/ 101	516/18166	554/18267	6.61/25.38
Madera	5/ 12	40/ 425	45/ 437	.54/ .61
Marin	0/ 0	12/ 39	12/ 39	.14/ .05
Mendocino	0/ 0	10/ 130	10/ 130	.12/ .18
Merced	282/ 468	544/ 1728	826/ 2196	9.86/ 3.05
Modoc	0/ 0	3/ 42	3/ 42	.04/ .06
Mono	0/ 0	2/ 24	2/ 24	.02/ .03
Monterey	1/ 2	153/ 1425	154/ 1427	1.84/ 1.98
Orange	1/ 2	27/ 994	28/ 996	.33/ 1.38

Table 5. (continued)

COUNTY	NO. OF WELLS / NO. OF SAMPLES			
	POSITIVE	NEGATIVE	TOTAL	PERCENT OF STATE TOTAL
Placer	0/ 0	6/ 69	6/ 69	.07/ .10
Plumas	0/ 0	14/ 153	14/ 153	.17/ .21
Riverside	35/ 127	204/ 4818	239/ 4945	2.85/ 6.87
Sacramento	0/ 0	126/ 1017	126/ 1017	1.50/ 1.41
San Benito	0/ 0	14/ 141	14/ 141	.17/ .20
San Bernardino	64/ 171	383/ 7598	447/ 7769	5.34/10.80
San Diego	1/ 1	26/ 354	27/ 355	.32/ .49
San Francisco	0/ 0	4/ 49	4/ 49	.05/ .07
San Joaquin	93/ 326	277/ 2129	370/ 2455	4.42/ 3.41
San Luis Obiso	0/ 0	50/ 561	50/ 561	.60/ .78
San Mateo	0/ 0	45/ 933	45/ 933	.54/ 1.30
Santa Barbara	0/ 0	79/ 1112	79/ 1112	.94/ 1.55
Santa Clara	1/ 1	186/ 2152	187/ 2153	2.23/ 2.99
Santa Cruz	0/ 0	117/ 1745	117/ 1745	1.40/ 2.42

Table 5. (continued)

COUNTY	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL	PERCENT OF STATE TOTAL
Shasta	0/ 0	22/ 305	22/ 305	.26/ .42
Sierra	0/ 0	2/ 31	2/ 31	.02/ .04
Siskiyou	1/ 4	12/ 193	13/ 197	.16/ .27
Solano	0/ 0	32/ 562	32/ 562	.38/ .78
Sonoma	0/ 0	53/ 339	53/ 339	.63/ .47
Stanislaus	115/ 266	234/ 1706	349/ 1972	4.17/ 2.74
Sutter	14/ 42	27/ 140	41/ 182	.49/ .25
Tehama	2/ 14	41/ 323	43/ 337	.51/ .47
Tulare	108/ 312	182/ 1927	290/ 2239	3.46/ 3.11
Tuolumne	0/ 0	1/ 3	1/ 3	.01/ .00
Ventura	1/ 1	107/ 2170	108/ 2171	1.29/ 3.02
Yolo	2/ 10	116/ 1250	118/ 1260	1.41/ 1.75
Yuba	0/ 0	26/ 237	26/ 237	.31/ .33
TOTAL	2303/5104	6073/66859	8376/71963	100/ 100

Table 6. Summary by county showing the number of pesticide compounds detected in well water and the total number of pesticides sampled.

COUNTY	NUMBER OF DETECTED PESTICIDES	TOTAL PESTICIDES SAMPLED
Alameda	0	40
Amador	0	6
Butte	0	55
Calavaras	0	5
Colusa	0	34
Contra Costa	1	55
Del Norte	2	24
El Dorado	0	22
Fresno	4	86
Glenn	3	71
Humboldt	0	20
Imperial	0	22
Inyo	0	9
Kern	3	68
Kings	1	81
Lake	0	22
Lassen	0	42
Los Angeles	3	83
Madera	1	70
Marin	0	4
Mendocino	0	33
Merced	3	82
Modoc	0	26
Mono	0	9
Monterey	1	51

Table 6. (continued)

COUNTY	NUMBER OF DETECTED PESTICIDES	TOTAL PESTICIDES SAMPLED
Orange	1	63
Placer	0	24
Plumas	0	33
Riverside	4	112
Sacramento	0	42
San Benito	0	38
San Bernardino	1	96
San Diego	1	68
San Francisco	0	25
San Joaquin	4	63
San Luis Obispo	0	62
San Mateo	0	65
Santa Barbara	0	73
Santa Clara	1	51
Santa Cruz	0	76
Shasta	0	53
Sierra	0	28
Siskiyou	2	33
Solano	0	44
Sonoma	0	33
Stanislaus	2	55
Sutter	3	33
Tehama	2	58
Tulare	4	94
Tuolumne	0	3
Ventura	1	78
Yolo	3	66
Yuba	0	34

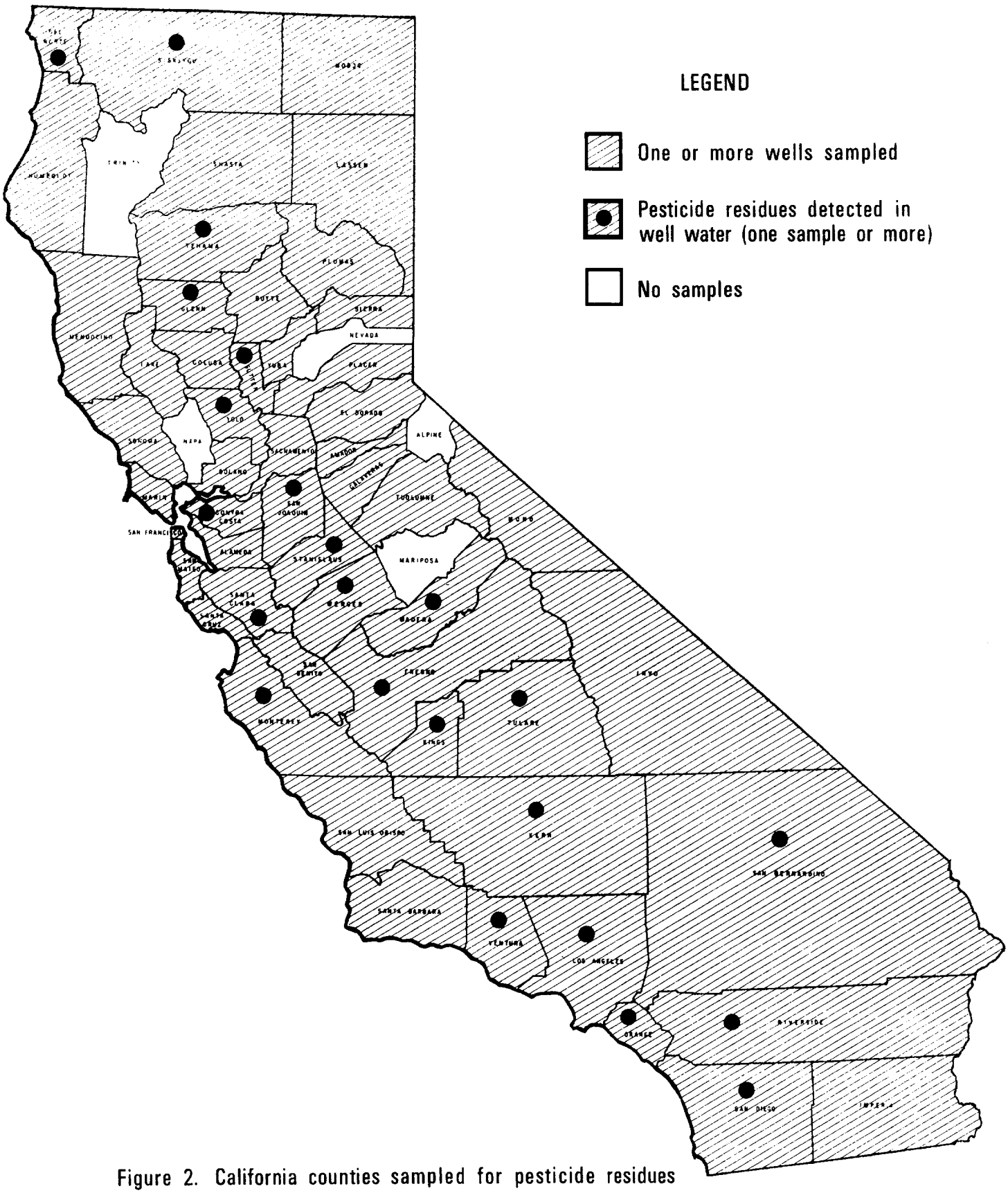

Figure 2. California counties sampled for pesticide residues in well water from 1975-1986.

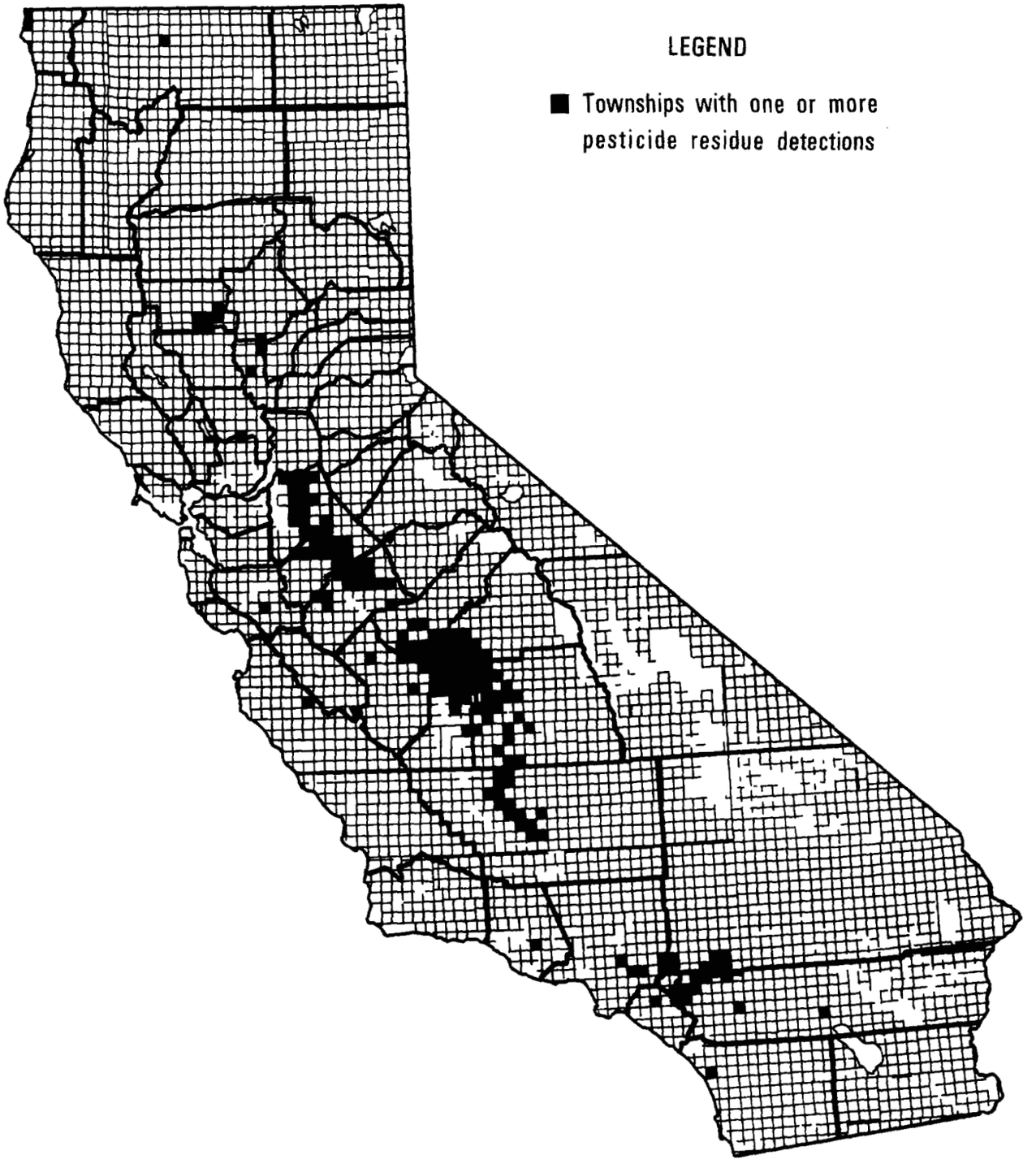

Figure 3. California townships with one or more pesticide residue detections in well water, 1975-1986. (Some 1986 data included)

RESULTS BY YEAR

Statewide Compilation

Data for well water samples were collected from 1975 through 1986. However, only a small amount of sampling data was available from 1975 to 1978 (Table 7). Beginning in 1979, the amount of sampling increased considerably, with the yearly total of sample results from 1979 to 1986 varying between 1,113 and 39,279 samples, taken from 800 to 2,121 wells. The large increase in sampling results recorded for 1984 and 1985, shown in Table 7, was due to the CDHS AB 1803 statewide monitoring study. This one study alone accounts for approximately 73% (52,634 records) of all sampling conducted for agricultural pesticides in California wells.

Table 8 shows a breakdown of the number of years with well sampling results and number of years with residues detected in wells for each county. Sampling in 11 counties revealed positive residue detections in well water in nearly every year that sampling occurred. The sampling periods for these counties varied from four years (Del Norte County) to ten years (Fresno County). Positive results were found in eight of the ten years in which wells in Fresno County were sampled for pesticides, and in seven of the nine years of well sampling in Tulare County. Wells in San Bernardino and San Joaquin Counties have been sampled for the past eight years, and have had pesticide residues detected in each year. Wells in Santa Barbara and Butte Counties, on the other hand, have been sampled for pesticide residues for seven and five years, respectively, but have had no detectable levels of residues found.

Twenty-one of the 53 counties where well water has been sampled have had wells tested for pesticides for only one or two years. It is clear that those counties which are located in the San Joaquin Valley and are largely agricultural, have been sampled for agricultural pesticides in well water over the longest period of time (Table 8). Table 7 shows that these same counties have also had the greatest number of wells sampled, relative to the total number of wells sampled statewide.

Table 7. Summary by year showing the number of wells and the number of samples contained in the 1986 well inventory data base, grouped into positive, negative and total categories.

	NO. OF WELLS / NO. OF SAMPLES		
YEAR	POSITIVE	NEGATIVE	TOTAL
1975	0/ 0	2/ 17	2/ 17
1976	0/ 0	8/ 27	8/ 27
1977[a]	0/ 0	0/ 0	0/ 0
1978	0/ 0	1/ 2	1/ 2
1979	342/ 504	627/ 1370	969/ 1874
1980	364/ 653	436/ 460	800/ 1113
1981	600/ 973	619/ 653	1219/ 1626
1982	839/ 1183	1186/ 2803	2025/ 3986
1983	491/ 688	711/ 1008	1202/ 1696
1984	151/ 334	1385/17554	1536/17888
1985	201/ 486	1917/38789	2118/39275
1986	104/ 283	653/ 4176	757/ 4459

[a]There are no records for 1977 in the data base.

Table 8. Summary by county showing the number of years in which pesticide residues were detected and the total number of years in which wells were sampled (1975-1986).

COUNTY	NUMBER OF YEARS WITH DETECTIONS[1]	TOTAL NUMBER OF YEARS SAMPLED[2]
Alameda	0	3
Amador	0	1
Butte	0	5
Calavaras	0	1
Colusa	0	3
Contra Costa	1	3
Del Norte	4	4
El Dorado	0	2
Fresno	8	10
Glenn	2	4
Humboldt	0	2
Imperial	0	2
Inyo	0	1
Kern	7	7
Kings	2	7
Lake	0	3
Lassen	0	2
Los Angeles	1	4
Madera	6	7
Marin	0	1
Mendocino	0	3
Merced	7	8
Modoc	0	1
Mono	0	1
Monterey	1	6
Orange	1	2
Placer	0	1
Plumas	0	2
Riverside	7	8
Sacramento	0	3
San Benito	0	2
San Bernardino	8	8
San Diego	1	5
San Francisco	0	2
San Joaquin	8	8
San Luis Obispo	0	4
San Mateo	0	3

[1]Number of years in which pesticide residues were found in well water.
[2]Number of years in which well water was tested for pesticide residues.

Table 8. (continued)

COUNTY	NUMBER OF YEARS WITH DETECTIONS	TOTAL NUMBER OF YEARS SAMPLED
Santa Barbara	0	7
Santa Clara	1	4
Santa Cruz	0	4
Shasta	0	2
Sierra	0	1
Siskiyou	1	2
Solano	0	4
Sonoma	0	2
Stanislaus	6	8
Sutter	5	6
Tehama	1	2
Tulare	7	9
Tuolumne	0	1
Ventura	1	6
Yolo	2	5
Yuba	0	3

D. DISCUSSION

Data Base Development

The well inventory data base was originally developed by the Environmental Hazards Assessment Program as a necessary first step in CDFA's Ground Water Protection Plan (a nonstatutory department-initiated program described in Part II). The purpose was twofold: (1) to identify reliable information on the occurrence of nonpoint source contamination of ground water by the agricultural use of pesticides; and (2) to computerize the data to permit subsequent graphical and statistical analyses of the problem. This report is the second summary of the contents of that data base, and includes data as of October 16, 1986. This document also fulfills the requirement in the PCPA (AB 2021) directing the CDFA to report annually to the Legislature, CDHS and SWRCB on the contents of this statewide data base.

The data base currently contains well sampling results for 164 pesticide active ingredients and related chemicals sampled for between 1979 and 1986. Of these 164 pesticides, 16 were detected in well water. Based on information we have collected to date, we consider nine of these to be from agricultural nonpoint sources. Ongoing investigations are being conducted to determine the validity of this conclusion. A case in point is data from the CDHS's AB 1803 monitoring results. According to CDHS staff, candidate pesticides were selected for AB 1803 monitoring because of their actual use in the area of sampling. However, there were known cases where water purveyors contracted with analytical laboratories selling "package deals": the laboratory had a set price for the analysis of a package of pesticides that included the selected pesticides. These "package deals" did not consider pesticide use in the area. Therefore, the AB 1803 monitoring results may not necessarily indicate that the sampling was connected with agricultural use.

In addition to questions pertaining to agricultural use determination for new data, there were also questions about the validity of detections of certain chemicals in the 1985 data base. Investigations into the reliability and sources of those records revealed the following:

(1) EDB: One positive result for ethylene dibromide (EDB) was recorded for Solano County. According to the Solano County Department of Environmental Management, no EDB was detected in two subsequent, separate samples from that well, nor in four other surrounding wells. Since this datum could not be confirmed, it was concluded that the first initial sample recorded as a positive detection in our 1985 report was inaccurate (a "false positive"). This record has been corrected in the data base.

(2) A small percentage of records in the 1985 report were obtained from the STORET data base.* In the SWRCB report Water Quality and Pesticides: A California Risk Assessment Program (1984),Cohen, et al. noted that 75 percent of the STORET records for pesticide residues in wells included in the 1983 Ramlit Associates, Inc. report were non-verifiable, and were therefore excluded from the updated list of pesticide detections in wells contained in the SWRCB 1984 report. Upon conferring with the SWRCB on the accuracy of the STORET data included in the CDFA 1985 Well Inventory report, we found that:

   (a) Endrin and Lindane: The four positive results for endrin and one positive result for lindane were the MDL values for those analyses, and not the actual concentrations. Records were corrected to reflect this and therefore, no endrin or lindane from a nonpoint source has been found in California ground water to date.
   (b) Dibromochloropropane(DBCP): The positive DBCP values were verified;
   (c) Pentachlorophenol(PCP): The three positive PCP values were verified, but upon consultation with the RWQCB, Region 5, they were determined to be from point source pollution. These records have therefore been deleted from the main file.

(3) Chloroform: There was a question on the appropriateness of including chloroform residue results in the well inventory. It has since been determined that chloroform results should not be included because chloroform is a by-product of the chlorination treatment of drinking water and is not applied to soil or crops in the field. The chloroform results included in the 1985 data base have since been deleted.

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* STORET is a U.S. EPA nationwide water quality data base.

(4) Methylene Chloride: Methylene chloride is used as a postharvest fumigant on strawberries and stored grain. It is also used as an industrial solvent. It is not applied to soil or crops in the field. The one methylene chloride record has therefore been deleted from the inventory.

Similar investigations will take place as new sampling data are received.

The well inventory data base is, in essence, a historical record of sampling efforts in California for pesticide residues in well water since 1975. Because agency sampling objectives for each study varied, the information obtained and recorded also varied. Uniformity of submitted data should improve with the agreement by the CDFA, CDHS and SWRCB on minimum reporting requirements for well sampling results.

The following problems were encountered in creating a standardized computer file from a compilation of well sampling data from different agencies:

1. There was no standard reporting format or sampling protocol among agencies. This led to data gaps from one study to the next, which made it impossible to compare results between studies. For example, the MDL was not recorded for all studies, and the basis for well selection differed between studies.

2. Sampling results from unpublished data often lacked important documentation. For example, if information on sampling methods or sampling objectives was not available, a comparison of the data quality or significance of results between studies was not possible.

3. Most of the sampling information was not accessible by computer. It was therefore necessary to manually code and transcribe data onto coding sheets before entry into the computer, a very time-consuming task that provided an additional source of error in the data entry process.

4. The state well number was not always included with sampling results, or the sampling site location was only noted by street address. It was necessary to specify the well location to at least the township/range/section(T/R/S) level, as one of the goals of the CDFA's Ground Water Protection Plan is to

develop the ability to regulate pesticide use at the section level to prevent ground water contamination. Also, a T/R/S location was necessary for computer mapping purposes. Initially, we tried to determine state well number by cross-referencing the address to a county map with T/R/S notation. This method proved to be too time-consuming and imprecise, so it was abandoned. Therefore, several thousand DBCP results missing T/R/S location, as well as results from other pesticide analyses, were not included in the inventory.

5. Several problems were encountered in using the EPA STORET system. First, because STORET information is unsolicited, the data base is incomplete with respect to statewide well sampling results for pesticides. Second, the chemicals in STORET are not labeled as pesticides and can not be sorted as such. It was therefore impossible to obtain all the pertinent data on pesticides that were potentially in the data base, within time constraints. Third, many agencies have not edited, nor verified their data after entry into STORET. It was therefore impossible to determine whether data in the STORET system had been edited, making the accuracy of the data questionable.

Limitations on Interpreting the Data

The data fields included in the inventory are those we felt were necessary to document valid results, and to analyze the geographic distribution of pesticide leaching in California. However, the well inventory is a compilation of studies conducted by various agencies for various reasons; therefore, the resulting inconsistencies in the types of data reported limit interpretation of the data. Specifically:

1. A complete state well number* was very often not included in data submitted to the CDFA. A request for this number must be made by the sampling agency to the Department of Water Resources (DWR). In most well sampling studies to date, more emphasis was placed on detecting pesticides than in uniquely identifying each individual well sampled. Therefore, the DWR state well number was rarely requested, or recorded. For our purposes, the absence of a

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* Official number assigned by the DWR which singularly identifies a well by location, indicating township, range, section, tract, sequence number, base and meridian.

DWR well number to differentiate unique wells within specific geographic areas makes it impossible to be completely accurate in counting the number of wells sampled. The number of wells in the data base is therefore a close approximation, and not a certainty.

2. Well construction information was very rarely reported. Most studies conducted were designed to identify presence or absence of pesticide residues in wells and not to determine the source of pollution or the integrity of wells sampled. A lack of information such as depth of perforations or well depth makes it impossible to compare results between wells and their relation to contamination (e.g., shallow wells vs. deeper wells, or shallow vs deeper perforation depths). Also, because residues may be present due to well construction factors, (e.g., cracked or non-existant sanitary seal) we may not infer that pesticides present in wells necessarily means pesticides are present in ground water.

3. Pesticide sampling by agencies other than the CDFA was not necessarily related to suspected nonpoint sources of contamination. Therefore it should not be assumed that all submitted results were from nonpoint sources. For example, a statement in a study might be made that chemicals "x" and "y" were sampled for because of their known use in the area, but no similar explanation was given for the other pesticides that were also analyzed. Another example is the CDHS AB 1803 monitoring, in which certain pesticides were sampled for that are not registered for use in California. In other words, a negative result can not always be interpreted as indicating that a particular pesticide has not leached to ground water after agricultural use, without further investigation to determine if the chemical was ever used in that location.

4. Just as the amount and type of agriculture varies from one county to the next, pesticide use patterns vary widely throughout the state. Differences occur in products used, application rates, application methods and timing of application. Due to these differences, positive well detections alone cannot be used to determine why a particular pesticide has or has not been detected in a well. Again, further investigation is needed to answer these questions.

5. The amount of sampling varies widely from one area to the next, and pesticides found are limited to those sampled for. Most of the sampling has been done in the San Joaquin Valley, in densely populated areas. By comparison, very little sampling has occurred in the coastal counties, or in rural areas, where wells are more likely to be in close proximity to agricultural fields. It is therefore inappropriate to draw quick conclusions about areas of the state being more sensitive to leaching than others based on results included in the well inventory alone. The sampling data in the well inventory tell us whether or not pesticides looked for were found, but not necessarily what is actually there. In other words, the data give us a picture of which pesticides are present in California well water among those pesticides sampled for, but not among all pesticides used in the state.

Despite these inherent limitations, the information on pesticide residues contained in the well inventory can be used in all of the following applications:

1) modeling
2) displaying the geographic distribution of pesticide contamination in wells
3) identifying areas potentially sensitive to pesticide leaching
4) displaying the geographic distribution of well sampling
5) as a basis for study designs for future sampling.

FACTORS CONTRIBUTING TO PESTICIDE MOVEMENT TO GROUND WATER AS A RESULT OF AGRICULTURAL USE

Background

Effective regulation of pesticide use to prevent contamination of California's ground water requires that we (a) understand the processes through which contamination occurs, and (b) possess reliable methods for preventing or mitigating contamination. These processes and mitigation methods vary depending on the nature of the contamination source.

Pollutants from point sources, such as storage or waste sites, are deposited and concentrated in small, well-defined areas. Residues eventually leach from the upper to lower soil layers, encounter ground water and then follow the movement of ground water from that location. The movement can be traced back to its source by locating a residue plume. Pollution from a nonpoint source cannot be traced to a single, definable location. Instead, the pollutants are dispersed over a large, poorly defined area, as in applications of agricultural chemicals to crops. In this case, location of a distinct residue plume is not possible and pollutant movement is very difficult to predict or trace back to its source.

Chemical residues in well water result from both agricultural and industrial activities. Pollution from the industrial sector is usually attributed to point sources such as leaks at manufacturing, storage or waste sites. Industrial point sources have been the subject of considerable scientific research, and state and Federal agencies have developed techniques to identify contamination sites and to designate mitigation methods (California Department of Health Services, 1985; California Assembly Resources Subcommittee on Status and Trends, 1983). Because the land mass affected by point source contamination is usually small, clean-up can be accomplished by removal and treatment of soil or by containment and treatment of the polluted ground water plume (Hunt, et al., 1985). In addition, future contamination may be prevented by proper design and placement of storage or waste sites.

Agricultural pesticide residues in well water arise from both point and nonpoint sources. Point sources include pesticide storage or disposal sites and applicator wash-off sites. Most of the pesticide residue detections in wells cited in the reports Water Quality and Pesticides: a California Risk Assessment

Program (Cohen and Bowes, 1984) and The Leaching Fields (Price, et al., 1985) were associated with point sources.

Agricultural nonpoint source problems are more difficult to identify and mitigate because of the large land masses involved, the lower concentration of chemicals in the soil, and the lack of well-defined contamination plumes. Unlike research on point sources of contamination, research to understand the processes involved in leaching of agricultural pesticides is only in its initial phase. Eventually, information gained from this research will be used to develop new agricultural practices that minimize the possibility of ground water pollution.

The agricultural scientist is at a disadvantage in finding solutions to the problem of agricultural pesticide residues in ground water for a number of reasons:

1) Pesticides are intentionally and repeatedly applied to the soil to avert crop loss by pests. Point source problems may be mitigated by stopping exposure to the soil, but use of this option with nonpoint sources from agricultural applications would result in crop loss.

2) To date, agricultural research on application of pesticides has sought to find low but effective rates of application so that costs of production are kept low. Can these rates be lowered further and still provide cost-effective protection? More research is needed to examine this question, but where rates are already at their lowest effective level, new pest control methods will have to be devised.

3) Procedures for mitigating contamination from point sources are not appropriate for agricultural nonpoint sources because of the large land masses involved. Removal of soil to appropriate waste sites is not a viable clean-up option. Relocation of farms, homesteads and communities established around crops that grow well in areas sensitive to leaching is out of the question.

For these reasons, research is needed on new effective pest control methods specifically designed to prevent future ground water contamination.

Discussion

The PCPA (AB 2021) requires CDFA to provide the legislature with a general discussion of the factors that contribute to the movement of pesticides to ground water. These factors are pesticide use and method of application, physical and chemical characteristics of pesticides, irrigation practices, soil type, climate, and dissipation (microbial, physical, leaching).

Pesticide residues in soil may disappear from the initial site of deposition in four ways: (1) through microbial action, microbes detoxify or break down the pesticide to nontoxic compounds; (2) through chemical degradation processes such as hydrolysis, breakdown products are produced; (3) through volatilization, the chemical diffuses from the soil surface; or (4) through leaching, the pesticide is transported from the upper to lower layers of soil. A ground water problem arises when leaching occurs at a faster rate than microbial or chemical processes. Previously, researchers thought that under nonpoint source conditions, leaching occurred at such a low rate that pesticides would not move from the upper to the lower layers of soil. But detections of pesticides in ground water since 1979 provided strong evidence for the importance of leaching in agricultural situations.

Since there are no known quick-fixes for residues in ground water due to agricultural nonpoint sources, the best available way to mitigate the problem lies in regulation of pesticides before or at their point of use. To enable sounder regulatory decisions, the CDFA Environmental Hazards Assessment Program (EHAP) conducts studies to provide information on how pesticides move through the soil to ground water. Information for each factor contributing to pesticide mobility in soil requested by the PCPA (AB 2021) has been accumulated and reviewed with respect to its impact on nonpoint source pollution by ground water. A discussion of our current findings on each of these factors follows.

Use and Method of Application

Known nonpoint source pesticide pollutants are almost exclusively active ingredients that are applied to the soil. Pesticides that are applied to foliage, such as protective foliar fungicides or some insecticides, may not be important leachers for two reasons: (1) exposure to sun enhances the rate of degradation; and (2) concentrations that eventually reach the soil are low enough to allow for rapid degradation before leaching. Thus, direct application and incorporation of a pesticide into soil is of most importance. Additionally, there are no known differences in the ability of different pesticide formulations, whether wettable powder, granular or emulsifiable concentrate, to

move through soil. Therefore, no one use, other than direct application to soil, can be singled out as causing more or less of a potential leaching problem.

Irrigation Practices

There are no studies in which the movement of a pesticide through soil was compared among different methods of irrigation at the same site of application. Thus, a direct comparison of the influence of types of irrigation on leaching is not possible. There has been speculation that low volume irrigation methods (drip and trickle) may reduce leaching (Holden,1986). In low volume systems less land area is watered so that the total mount of applied water is decreased with respect to conventional border, furrow or sprinkler methods. However, water may be applied daily so that movement of pesticides in wetted areas may actually be increased. The EHAP is conducting a study to provide data for these comparisons.

Physical and Chemical Characteristics of Pesticides

The physical and chemical characteristics of pesticides thought to be important in movement through soil are: soil adsorption (usually denoted by the coefficient of soil versus water partitioning, K_d or K_{oc}), microbial soil half-life, chemical hydrolysis soil half-life, vapor pressure, and water solubility. These factors are used in models of pesticide transport through soils (Rau, 1985). Cohen and Bowes (1984) estimated values to act as indicators of leaching potential. Recently, CDFA has undertaken a statistical approach to derive more defensible values for determining potential ground water pollutants in connection with Section 13144 of the PCPA (AB 2021). A description of these procedures and values will be available in a separate report.

Very few field studies have been conducted to determine the correctness of any values regardless of the method by which they were derived. Recently, a study by EHAP provided some insight into the relative importance of these values. Three citrus herbicides were compared with respect to their movement through soil to ground water in a potentially vulnerable area of the San Joaquin Valley. The compounds were: simazine (low water solubility, low soil adsorption and intermediate soil half-life), diuron (moderately low water solubility, high soil adsorption and moderately high soil half-life), and bromacil (high water solubility, low soil adsorption and long soil half-life). All three pesticides were found in well water samples. These results indicated that physical and

chemical properties alone may not adequately differentiate among pesticides with respect to leachability in a vulnerable geologic area.

Soil Type

The type of soil is a very important factor in determining leaching of pesticides. Numerous detections of nonpoint source contamination have occurred in the predominantly sandy soils of the San Joaquin Valley whereas ground water contamination in coastal valleys (excluding those in the North Coast) is virtually non-existent (Cardozo, et al., 1985). EHAP has undertaken an investigation to provide a statistical rating of vulnerable areas based on surface soil nomenclature (Teso, submitted). In that study, occurrence of DBCP residues in wells was correlated with the occurrence of soil family names using a multivariate statistical approach. A well study is now being conducted to test the correlation of predicted values of soil vulnerability generated from the model with the occurrence of pesticide residues in well water.

Climate

Climatic factors may override all of the previously mentioned factors in causing ground water contamination. An example of the influence of climate is the experience with residues of aldicarb in well water in Del Norte County (Lee,1983). Soils in that area are high in organic matter so they may be capable of retarding pesticide movement. However, the annual rainfall is over 100 inches and it occurs primarily in winter months. Aldicarb was applied in the fall to lily bulb fields to control nematode problems in the soil. The amount of rainfall was sufficient to drive pesticide residues to the shallow ground water located at approximately ten feet. Thus, climatic conditions must not be overlooked as an important factor in the leaching of pesticides through soils.

SUMMARY

Well inventory data indicate sampling for pesticide residues has steadily increased since the discovery of DBCP in California wells in 1979. Results of sampling over the last seven years show that the number of pesticides detected in well water and the number of pesticides present in well water as a result of agricultural use do not appear to be increasing significantly.

Sixteen pesticides and related compounds have been detected in California well water. Based on information confirmed to date, CDFA has determined that residues from a total of nine of these chemicals have originated from agricultural nonpoint sources: DBCP, 1,2-D, EDB, aldicarb, aldicarb sulfone (a degradation product of aldicarb), atrazine, simazine, diuron, and prometon (Table 9). This number may increase as we collect more sampling data and as we gain better understanding of how agricultural pesticides move through soil to ground water.

Regulation of pesticides to prevent residues from entering well water as a result of agricultural use is difficult because of insufficient scientific knowledge of how pesticides move to ground water. Factors that contribute to ground water contamination by pesticides used in agriculture include use and method of application, irrigation practices, pesticide physical and chemical characteristics, soil type, and climate. The role these factors play in the contamination process is not fully understood. CDFA environmental scientists are working to understand these factors and to promote research on developing environmentally safe and economically feasible alternative pest control practices.

Table 9. Summary of pesticides in well water determined to be present as a result of agricultural use, 1986 Well Inventory Data Base.[1]

Active ingredient	First found in CA. well water	CDFA's role in mitigating the problem
Dibromochloropropane (DBCP)	1979, by Central Valley Water Quality enforcement activities against Occidental Chemical Company, Lathrop.	Use suspended in 1979 after male sterility was discovered in workers at Lathrop plant.
Ethylene dibromide (EDB)	1982, by CDFA during EPA-funded study on pesticide residues in soil and ground water.	1983, uses cancelled by CDFA in all counties where residues were found.
1,2-dichloropropane (1,2-D)	1983, by Department of Health Services in a study of the impact of organic residues on drinking water quality in Kern County. Subsequently, extensive residues were found by North Coast Regional Water Quality Control Board in Del Norte Co.	Use of D-D (35% 1,2-D) suspended in Del Norte County by CDFA. After extensive study by CDFA, D-D was withdrawn from the market. Telone II (2% 1,2-D) remains on the market.
Aldicarb, Aldicarb Sulfone	1983, by North Coast Regional Water Quality Control Board in an investigation of the impact of agriculture on water quality on the North coast.	Use suspended by CDFA in Del Norte County where residues were found. Conducted studies of aldicarb in Monterey and Kern County wells with SWRCB and CDHS. No aldicarb or its breakdown products were found.
Simazine	1982, by CDFA during an EPA-funded study on pesticide residues in soil and ground water.	Conducted study of simazine movement through soil in 1984. Found residues in ground water at low levels in Glenn Co. and Tulare Co. in 1986 and determined them to be present due to agricultural use. Briefed state and county health officials. Entered simazine into the PCPA detection review process August 4, 1986.

Table 9, Continued

Active ingredient	First found in CA well water	CDFA's role in mitigating the problem
Atrazine	1985, by CDHS during sampling of large water systems pursuant to AB1803.	Monitored, and found low level residues in ground water in Glenn Co. and later in Tulare Co., and determined they were present due to agricultural use. Briefed state and county officials. Entered atrazine into the PCPA detection review process July 3, 1986.
Diuron	1986, by CDFA, in Tulare Co. during above study.	Sampled further; found low level in wells and determined they were present due to agricultural use. Briefed state and local health officials. Entered diuron into PCPA detection review process October 1,1986.
Prometon	1986, by CDFA, in Glenn County	Monitored, found low level residues in ground water, and determined they were present due to agricultural use. Briefed state and local health officials.

[1]Does not include residues arising from point sources such as manufacturing sites, or isolated incidents arising from faulty wells or other special cases.

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II.

ACTIONS TAKEN BY THE CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE TO PREVENT PESTICIDES FROM ENTERING GROUND WATER AS A RESULT OF AGRICULTURAL USE

II. ACTIONS TAKEN BY CDFA TO PREVENT PESTICIDES FROM ENTERING GROUND WATER AS A RESULT OF AGRICULTURAL USE

CDFA has responsibility for regulating the sales and use of pesticides in California. In regard to protecting ground water, this responsibility means (a) identifying which pesticide active ingredients, under what conditions, present a threat to ground water quality by moving through soil as a result of agricultural use; and (b) taking appropriate regulatory action to prevent or mitigate ground water contamination. CDFA actions to prevent agricultural pesticides from entering ground water accordingly focus on these goals. The actions occur in three major areas: implementation of the Pesticide Contamination Prevention Act (PCPA), registration and evaluation of pesticides, and environmental monitoring activities, including development of the Ground Water Protection Plan. These activities are described below.

Pesticide Contamination Prevention Act (Sections 13141-13152, Article 15, Chapter 2, Division 7 of the California Food and Agricultural Code)

In addition to compiling the statewide inventory of wells sampled for pesticides described in this report, CDFA has taken the following major actions to implement the Pesticide Contamination Prevention Act.

April, 1986	Minimum well sampling reporting requirements were jointly established by CDFA, CDHS, and SWRCB pursuant to Section 13152[d].
June, 1986	A request for environmental fate data for each active ingredient in each registered pesticide pursuant to Sec. 13143[a] was sent to all registrants.
July, 1986	A departmental implementation strategy including an activity flow chart was developed.
July, 1986	CDFA met with the Department of Water Resources to coordinate efforts to obtain well numbers for well samples being entered into the Well Inventory.
July, 1986	Members were appointed and general procedures set for the Pesticide Registration and Evaluation Subcommittee.
August, 1986	All state agencies that sample wells for pesticides were notified of reporting requirements pursuant to Section 13152[c].

August, 1986 — Regulations prescribing procedures for resolving disputes or funding the filling of data requirements of Section 13143 were submitted to the Office of Administrative Law in June and presented for public comment in a hearing on Aug. 27, 1986.

December, 1986 — Pursuant to Section 13144[a], specific numeric values were formulated. These values will serve as guidelines for evaluating the potential for ground water contamination of all pesticides registered for agricultural use in California. The process of establishing these values is described in a separate report.

To date, four herbicides newly discovered in ground water as a result of agricultural use have been placed into the detection review process stipulated in Section 13149. The status of these pesticides as of Nov. 30, 1986, is shown below.

	Date of Agricultural Use Determination	Date Registrant(s) Notified	Hearing Date
Atrazine	July 3, 1986	July 28, 1986	January 28, 1987
Simazine	August 4, 1986	August 18, 1986	February 18, 1987
Bromacil*	September 2, 1986	September 11, 1986	March 11, 1987
Diuron	October 1,1986	October 16, 1986	April 22, 1987

*Detection confirmed too late to be entered into the 1986 Well Inventory data base. Bromacil will appear in the 1987 data base.

Pesticide Registration and Evaluation

CDFA professional staff consider several factors contributing to a pesticide's potential for contaminating ground water during the registration and evaluation process. Requests for registration of products containing new active ingredients must be accompanied by data on product chemistry, effects on wildlife and aquatic organisms, and environmental fate. The data submitted vary with the prospective uses of the product, and include melting point, boiling point, solubility, density, vapor pressure, pH, viscosity, octanol/water partition coefficient, soil adsorption and other physicochemical characteristics, hydrolysis, photodegradation, aerobic and anaerobic metabolic breakdown, leaching and

adsorption, volatility, and field dissipation and accumulation studies. To evaluate a new product containing an already-registered active ingredient, CDFA reviews data on file for that active ingredient.

Based on these data, CDFA assesses whether use of the product poses a potential for adverse effects to public health or the environment. If after evaluating the data CDFA finds that all required data have been submitted and no potential adverse effects have been identified, the pesticide is registered for use according to label instructions.

Certain pesticides are registered by the U.S. Environmental Protection Agency or by California as restricted materials if they have been shown to have a significant but mitigable adverse health or environmental effect. State and Federal restrictions may differ. Restrictions may be placed on quantity sold, location or manner of application. Examples of restricted materials are carbofuran, methyl bromide, nemacur, aldicarb, and paraquat. All applications of restricted materials are carefully controlled and documented by the County Agricultural Commissioner, who is the primary enforcement officer at the local level for federal and state pesticide use laws. All uses of restricted chemicals must be reported to the CDFA.

In addition to registering pesticides, the CDFA conducts reviews of pesticides in use. A pesticide found to cause an unanticipated adverse health or environmental effect--such as ground water contamination--may be reevaluated and its registration cancelled, or its use restricted or suspended. Examples of reevaluated chemicals for which regulations have been adopted prohibiting registration in California are DDT, arsenicals, mercury and cadmium. Alachlor has been placed in formal reevaluation by the CDFA partly due to public health concerns regarding the possiblity of residues occurring in California ground water.

Environmental Monitoring Activities

Since 1979 CDFA has been working to gain a clearer understanding of the movement of pesticides through soil in order to prevent ground water contamination through effective regulation of pesticide sales and use. The CDFA's Environmental Hazards Assessment Program (EHAP), in the Environmental Monitoring and Pest Management Branch, is at the core of this effort. The EHAP conducts monitoring

studies throughout the state to measure off-target movement of pesticides in soil and ground water, gathers environmental fate data on registered pesticides, and tests mathematical models predicting the behavior of pesticides in soils. Information gained from this work guides CDFA in the regulatory decision-making process described above.

CDFA's goal relative to ground water is to use all relevant information to develop an accurate assessment of the magnitude of the residue problem, establish a reliable monitoring program, and derive an effective regulatory framework to eliminate pesticide residues in ground water. Since we are not yet able to assess the seriousness of the problem, we are looking at all levels of residues in ground water as unacceptable.

The EHAP first began monitoring soils and ground water for pesticide residues in 1979 in response to the discovery of aldicarb and DBCP in ground water in several states. At that time, very little ground water sampling had been done, and most soil sampling did not test for pesticide residues at depths below 100 centimeters. Lists of EHAP's published reports and studies in progress which examine aspects of pesticide movement to ground water follow.

PUBLISHED REPORTS

1. Monitoring Selected Ground Water Basins for the Presence of Aldicarb, (November, 1979). This project was a cooperative effort by CDFA, CDHS and SWRCB to sample wells in two areas located in Monterey and Kern counties where high aldicarb use was documented and hydrological conditions suggested a high potential for ground water contamination. No residues of aldicarb or its breakdown products were found in this study.

2. Pesticide Movement to Ground Water Vol. I: Survey of Ground Water Basins for DBCP, EDB, Simazine and Carbofuran (January, 1983). In 1980 the CDFA and the U.S. Environmental Protection Agency joined together to conduct a multi-phased study to examine whether selected pesticides were moving down through the soil to ground water as a result of agricultural use and whether any predictive methods could identify agricultural settings and practices which might result in ground water contamination from applied pesticides.

   Part I of the study surveyed the extent of ground water contamination by four pesticides, DBCP, EDB, simazine and carbofuran, in four major agricultural production areas, two in the Central Valley and two in coastal regions during the summer of 1982. Of the 216 wells sampled, 35 (16%) contained detectable levels of the selected pesticides. All positive findings were located in the two Central Valley agricultural areas.

3. Pesticide Movement to Ground Water Vol. 2: Pesticide Contamination in the Soil Profile at DBCP, EDB, Simazine and Carbofuran Application Sites, (1983). Part II of the study investigated factors which influence the migration of pesticides through soil to ground water, and documented the presence of residues in soil profiles taken from pesticide application sites. EDB and simazine were detected at depths to 40 feet in the soil profiles. Statistical analyses indicated that three variables were most important in predicting the presence of pesticides in the soil: time elapsed since the last pesticide application, organic content of the soil, and soil moisture. These findings raised questions about the complex interaction between soil properties, cultural practices, and chemical properties of pesticides.

4. Pesticide Movement to Ground Water Vol. III: Use of Agronomic Variables to Predict Ground Water Contamination in the San Joaquin Valley, Ca., (July, 1985). In Part III of the study data for ten agronomic variables in the San Joaquin Valley were analyzed for their ability to predict ground water contamination within townships (36 square mile units). The principle factors predicting contamination were found to be well depth, depth of the upper casing perforation of each well, and the total deciduous fruit and nut tree acreage present in each well's township.

5. Agricultural Residues in California Well Water: Development and Summary of a Well Inventory Data Base for Non-point Sources (July, 1985). First EHAP report on development and results contained in the Well Inventory data base. Highlights of the 1985 data base are noted in the Introduction to Part I of this report.

6. Ethylene Dibromide in Two Soil Profiles, (August, 1985). EHAP sampled soil for EDB residues in two locations with histories of EDB applications in an attempt to explain the presence or absence of EDB residues in well water relative to soil/site characteristics.

7. Ground Water Protection Plan: Agricultural Pesticide Residues sampled in Well Water 1975-1984, County Summaries (December, 1985). Tables showing positive and negative results of well water sampling by township/range/section, based on 1985 Well Inventory data. This information is developed for and distributed to County Agricultural Commissioners.

8. Ground Water Protection Plan: Restricted Pesticides with Major Uses as Soil Applied Compounds, County Summaries (December, 1985). Tables showing use of restricted pesticides with major uses as soil applied compounds by township/range/section, based on the 1983 CDFA Annual Pesticide Use Report. This information is developed for and distributed to County Agricultural Commissioners.

9. Report on Monitoring for Alachlor in Well Water: I. Sampling in the Sacramento Valley, (March, 1986). Fourteen wells in Yolo and Solano Counties were sampled in 1985 for alachlor and metolachlor residues. No residues were detected.

10. Effects of Agronomic and Geologic Factors on Pesticide Movement in Soil: Comparison of Two Ground Water Basins in California (August, 1986). This study examined effects of cultural practices, climatic conditions, and soil and geologic factors on soil mobility of herbicides in a coastal and inland ground water basin. Inland samples showed simazine in soil and in ground water samples at 28 feet. Coastal samples showed no simazine deeper than 8 feet below the soil surface, and diuron and bromacil only near the surface. Irrigation method and amount of water applied appeared to have less influence on pesticide movement than soil factors or pesticide chemistry.

STUDIES IN PROGRESS

1. Monitoring the movement of nonfumigant nematicides through the soil profile after application through drip irrigation.

2. Monitoring the persistence and movement of fenamiphos in lilly bulb field soils in Del Norte County.

3. Survey of molinate and thiobencarb concentrations in soil and ground water in rice growing areas.

4. Monitoring for atrazine, simazine and prometon in well water and soil in Glenn County.

5. Monitoring for atrazine, simazine, prometon, bromacil and diuron in Tulare County.

6. Sampling soil in Sutter County for the presence of bromacil.

7. Effects of seasonal winter rainfall on pesticide leaching in Riverside County.

8. Effects of seasonal winter rainfall on pesticide leaching in Fresno County.

In addition to conducting these technical studies, the Environmental Monitoring Branch has developed a Ground Water Protection Plan, described below.

Ground Water Protection Plan

In 1984, CDFA began developing a long range plan to selectively control the application of ground applied pesticides to reduce their potential for ground water contamination. This Ground Water Protection Plan will incorporate the results of laboratory studies, well sampling, soil coring and computer modeling studies to estimate the potential for a pesticide to reach ground water. Localized information on factors that influence movement of pesticides through soils to ground water will be collected, standardized, and distributed to County Agricultural Commissioners, who may use this information at their discretion in making local regulatory decisions or conditioning CDFA regulatory decisions at the local level.

As groundwork for the plan, two data sets have been established, each of which will be regularly updated:

1. A statewide inventory of wells sampled by public agencies for agricultural pesticide residues of pesticides since 1975 (now required in the Pesticide Contamination Prevention Act,and described in this report), and

2. Areas where selected restricted pesticides applied primarily to the soil are applied each year, beginning in 1983.

CDFA is also beginning work on other data sets which will consist of factors influencing the movement of pesticides to ground water, such as depth to ground water, soil type, geologic and climatic conditions, etc. (discussion on pages 66 through 70). We plan to have one data set compiled each year for approximately five years. Eventually all data will be classified geographically by section (one square mile).

Data classified by section will provide Agricultural Commissioners with a scale of analysis specific enough to make sound decisions regulating pesticide use spatially by section, township (36 square miles), or by combinations of sections

or townships. At this time, these decisions must be made on a county-wide basis because reliable information is not available on which to base smaller scale restrictions.

Section-based information will also allow regulations or other risk management measures protecting ground water to be tailored to high risk areas without imposing inappropriate restrictions in low risk areas. As research improves understanding of how agricultural chemicals move through soils, CDFA hopes to develop standardized "risk measures" indicating the potential for pesticides used in agriculture to reach ground water in a given section. We anticipate these risk measures will be formulated by the fifth to seventh year of implementation.

The CDFA Ground Water Protection Plan recognizes pesticides as important agricultural tools, and encourages environmentally sound use of these chemicals. The Plan stands on its own as a regulatory decision-making tool to be used at the discretion of Agricultural Commissioners. It will also aid the implementation of the Pesticide Contamination Prevention Act by providing a state and county framework to document pesticide use, guide monitoring, and administer regulations.

III.

ACTIONS TAKEN BY THE STATE WATER RESOURCES CONTROL BOARD TO PREVENT PESTICIDES FROM ENTERING GROUND WATER

Introduction

To comply with the requirements in Section 13152 (e)[4] of the PCPA (AB 2021), CDFA asked SWRCB to provide a statement of their actions to prevent pesticides from migrating to ground water in California. The following describes SWRCB programs in place prior to the passage of the PCPA. The Act presents new requirements for SWRCB and CDFA to work more closely together, and we expect to increase interagency coordination in responding to positive detections of pesticide residues in ground water.

State of California

Memorandum

To : Ronald J. Oshima, Branch Chief
Environmental Monitoring and
Pest Management
Department of Food and Agriculture
1220 N Streeet, Room A-149
Sacramento, CA 95814

Date :

From : David B. Cohen, Ph.D., Chief
Pollutant Investigations Branch
Division of Water Quality
STATE WATER RESOURCES CONTROL BOARD

Subject: AB2021 (PESTICIDE CONTAMINATION PREVENTION ACT)

The Pesticide Contamination Prevention Act requires that a summary of mitigation measures taken by the Department of Food and Agriculture (DFA) and the State Board to prevent economic poisons (pesticides) from migrating to the ground waters of the State should be reported to the Legislature on or before Decmeber 1, 1986 and annually thereafter. Attached you will find a summary report of all the ground water findings of pesticides identified by the State Board and Regional Water Quality Control Boards (Regional Boards). The report also includes the measures taken by the State and Regional Boards to mitigate the problem. Pursuant to Section 13152(e)(4) of the Act, this information should be included in the report to the Legislature.

If you have any questions on this issue, please call Dr. Syed Ali at 3-7609.

Attachment

cc: Regional Board Executive Officers

IV. Actions taken by the State Water Resources Control Board and Regional Water Quality Control Boards to prevent pesticides from entering ground water.

A. STATE WATER RESOURCES CONTROL BOARD

In response to increasing evidence of pesticide contamination of ground water, the State Water Resources Control Board (State Board) implemented several programs to identify, correct, and prevent pesticide contamination of ground waters of the State.

1. Priority Chemicals Program:

This program was developed to provide an early-warning system for California regulatory agencies charged with protecting surface and ground waters from agricultural and industrial chemical pollution. The soil fumigant nematicides, 1,2-dichloropropane (1,2-D)/1,3-dichloropropene (1,3-D) and ethylene dibromide (EDB), were studied in this program because of the potential of these pesticides to contaminate ground water.

Concentrations ranging up to 16 ppb of 1,2-D were detected in 14 wells in three counties by State Board staff. Table 1, extracted from the State Board's report on 1,2-D and 1,3-D (Cohen, et al., 1983), lists other findings of 1,2-D in ground water. To mitigate this problem, State Board staff asked DFA to reevaluate pesticides containing 1,2-D. Further, staff recommended that the concentration of 1,2-D in these pesticide formulations should be reduced to the lowest practical level. DFA accepted the State Board's recommendations and developed a regulation to limit the amount of 1,2-D in nematicides used in California to 0.5 percent or less. Use of D-D (35 percent 1,2-D) was suspended in Del Norte County by DFA. Subsequently, Shell Chemical Company withdrew the product from the California market.

State Board staff recommended that U. S. EPA and DFA suspend or cancel all the uses of EDB based on the findings of this carcinogenic pesticide in California ground water (Ali and Richard, 1984).

Table 1

SUMMARY OF GROUND WATER CONTAMINATION IN CALIFORNIA:
1,2-DICHLOROPROPANE, 1,3-DICHLOROPROPENE, 3-CHLOROALLYL ALCOHOL

Date	Location	Amount Detected (ppb)	Wells Sampled: No. Sampled	Wells Sampled: No. Positive	Comments	References*
1,2-DICHLOROPROPANE						
1979	San Joaquin Co., Manteca	0.2-5.0	7	7	Near Occidental Chem. Co., private & community wells.	a
1982	"	--	7	0	" "	a,b
1981	Tulare Co., Visalia	2.9-25.9	2	2	Nat. Ground Water Study, comm. wells.	c
1981	Throughout California	--	61	0	" "	c
1981	Fresno Co., Reedley	1	1	1	" "	c
1982	Fresno County	--	23	0	Domestic wells.	b
1982	Merced County	0.4-0.9	37	3(8%)	" "	b
1982/83	San Joaquin Co., Manteca	0.4-16	35	9(26%)	" "	b
1982	"	--	7	0	Community wells.	b
1982	Yolo Co., Davis	0.7	4	1	Municipal community well.	d
1983	Del Norte Co., Smith River	0.4->10	37	25(68%)	Domestic wells.	e
1983	Del Norte Co., Crescent City	Up to 1200	1	1	Pesticide storage site monitoring well.	e
1983	Kern Co., Bakersfield	0.14-7.9	40	17(43%)	Mostly community wells.	f
1983	Sutter Co., Oswald	3.0	4	1(25%)	Domestic wells.	b
NO. COUNTIES WITH POSITIVE WELLS TO DATE = 8		TOTAL WELLS =	266	67(25%)		
1,3-DICHLOROPROPENE						
1979		--	72	0	DFA	g
1982/83		--	136	0	SWRCB & RWQCB	b,e
NO. OF COUNTIES EXAMINED = 5			208	0		
3-CHLOROALLYL ALCOHOL						
1983	Del Norte Co., Crescent City	Up to 1410			Monitoring well, pesticide storage site.	e

SOURCE: Cohen, et al., 1983

2. Pesticide Registration and Evaluation Program:

State Board staff evaluates the ground water contamination potential of all the pesticides which are submitted to DFA for registration, and selectively reviews currently registered pesticides. Pesticides with a higher potential for contamination are prioritized for an in-depth study which includes ground water monitoring in selected areas of high use. Table 2 lists four currently registered pesticides which have been detected in ground water in this program.

Staff has informed DFA and U. S. EPA of the presence of alachlor and metolachlor in a Yolo County water supply well. This appears to be an isolated finding, since further sampling in the surrounding area was negative for alachlor and metolachlor in ground water.

Table 2. Pesticides detected in ground water samples in the Pesticide Registration and Evaluation Program

County	Site	Well Type	Pesticide	Concentration (ppb)
Yolo	Davis	Domestic	Alachlor	0.98 - 2.2
			Metolachlor	0.43 - 0.6
			Simazine	0.09 - 0.15
	Davis	Domestic	Simazine	0.14
Merced	Los Banos	Domestic	Diazinon	0.6

3. Special Studies:

(i) Ground Water Contamination Study: In 1982, the State Board funded a study conducted by a private consultant (Ramlit Associates) to provide an assessment of ground water contamination by pesticides in California. The study report (Litwin et al., 1983) provided for the first time, a centralized collation of all known reports of pesticides in California ground water. Over 50 different pesticides were discovered in ground water in 23 counties between 1970 and 1982. These data were subsequently verified and updated by State Board staff and are presented in Table 3 (Cohen and Bowes, 1984).

Although few source investigations were documented, many of the 512 cases of ground water contamination (excluding DBCP) appeared to have been caused by point

TABLE 3

PESTICIDES IN CALIFORNIA GROUND WATER (EXCLUDING DBCP)[1]

COUNTY

PESTICIDE	BUTTE	CONTRA COSTA	DEL NORTE	FRESNO	GLENN	HUMBOLDT	KERN	LAKE	LOS ANGELES	MADERA	MENDOCINO	MERCED	RIVERSIDE	SACRAMENTO	SAN BERNARDINO	SAN DIEGO	SAN JOAQUIN	SANTA CLARA	SANTA CRUZ	SISKIYOU	SOLANO	SONOMA	STANISLAUS	SUTTER	TEHAMA	TRINITY	TULARE	YOLO	TOTAL VERIFIED (1984)	TOTAL RAMLIT REPORT (1982)	MAXIMUM CONCENTRATION(ppb) TOTAL VERIFIED (1984)
ALDICARB			27																										27		47.0
ALDRIN		2							4				10			5	1												22	26	17.8
ATRAZINE																				1		1							2		10.0
BENTAZON					1																								1	1	20.0
BENZALDEHYDE														1															1	1	2.0
CHLORDANE							1								1	1	1												4	9	22.0
CHLORPROPHAM				1																									1	1	8.0
DACTHAL				4																									4	4	35.0
DDD		1		1											1		1												4	4	3.0
DDE				1			1		1				8		1	2	1												15	35	5.0
DDT		2		1			1						5				1												10	28	20.0
DEF																	1												1	1	1.7
DELNAV																	4												4	5	31.0
DIAZINON		10												2															12	16	9.0
DICHLONE		1																											1	1	2.7
1,2-DICHLOROPROPANE	1		30	1			17					3					16							1			2	1	72		62.0
1,3-DICHLOROPROPENE (CIS)																		1				1							2		6.7
1,3-DICHLOROPROPENE (TRANS)																		1											1		11.0
DIELDRIN		1		2													1												4	9	5.0
DIFOLATAN																														4	
DIMETHOATE		11		7			1			1							4												24	21	190.0
DIPHENAMID				1																									1	1	6000.0
DISULFOTON							1										5												6	7	9.5
DNBP		9		2																									11	14	740.0
DNOC		2																											2	5	35.0
DURSBAN														3															3	3	90.0
EDB				3			10					4					9				1		3					2	32	22	380.0
ENDOSULFAN		12		7				1											3										23	16	130.0
ENDRIN							1																						1	23	40.0
ETHION		5																											5	5	30.0
ETHYLENE THIOUREA		1																											1	1	7.0
FURADAN (carbofuran)				1									1																2	1	5.0
HEPTACHLOR									3								1												4	5	0.45
KELTHANE (dicofol)				2												1													3	6	1.99
LINDANE		3		2			2		2					2			7												18	64	46.0
MALATHION		1		3			1																						5	9	23.0
METHYLENE CHLORIDE														4															4	4	7.0
NALED		7																											7		10.0

Cont'd

TABLE 3 Cont'd

PESTICIDE	COUNTY																															TOTAL VERIFIED (1984)	TOTAL RAMLIT REPORT (1982)	MAX. CONCENTRATION (ppb)
	BUTTE	CONTRA COSTA	DEL NORTE	FRESNO	GLENN	HUMBOLDT	KERN	LAKE	LOS ANGELES	MADERA	MENDOCINO	MERCED	RIVERSIDE	SACRAMENTO	SAN BERNARDINO	SAN DIEGO	SAN JOAQUIN	SANTA CLARA	SANTA CRUZ	SISKIYOU	SOLANO	SONOMA	STANISLAUS	SUTTER	TEHAMA	TRINITY	TULARE	YOLO			
OMITE							2																						2	2	92.0
ORDRAM					1																								3	1	6.3
PARAOXON							1																		1			1	1	1	6.0
PARATHION, ethyl		2															2												4	3	11.3
PARATHION, methyl																	1												1		2.5
PCNB		1																											1	2	0.3
PCP	15									1							1			9		2				3	7		38	29	44×10^6
PHORATE							2																						2	5	20.0
PHTHALATES														4															4	4	10.0
SEVIN																	3												3	6	80.0
SIMAZINE				1				1			1		2							1		1					2		9		0.53
TCP																				6									6	9	980.0
TOXAPHENE	1	2		1													1												5	14	123.0
TREFLAN					1																								1	1	0.9
ZYTRON				4																									4	4	30.0
2,4-D			1			2											7												10	38	7.2
2,4,5-T																	4												4	8	929.0
2,4,5-TP			1						1							1													3	17	1.0
TOTAL	17	73	59	45	3	2	41	2	11	2	1	7	26	16	3	10	72	2	3	17	1	5	3	1	1	3	11	4	441	512	

[1]The numbers refer to contamination incidents in the county.

SOURCE: Cohen and Bowes, 1984

source discharges such as spills at manufacturing, handling, or disposal sites. Regional Boards have been following up on these contamination incidents as discussed under Regional Board mitigation measures later in this report.

The State Board report (Cohen and Bowes, 1984) also discussed the widespread ground water contamination problem (over 2,500 wells in 11 California counties) of DBCP as a result of its agricultural use.

(ii) AB 1803 Follow-Up Program: Assembly Bill 1803 directed the California Department of Health Services (DHS) to implement a monitoring program for organic chemicals in public drinking water systems. Four pesticides (DBCP, atrazine, simazine and 1,2-D) were detected at concentrations ranging up to 6.8 ppb in 222 large water supply systems (systems with more than 200 connections) in 14 counties (DHS, 1986). These data are presented in Table 4. The State Board has initiated an AB 1803 follow-up study to mitigate the ground water contamination problem identified in the AB 1803 monitoring program. The goal of this program is to identify the discharges responsible for the well contamination. This goal is accomplished by: (1) determining the suspected dischargers within a half-mile radius of each polluted well; (2) taking appropriate enforcement actions to initiate ground water investigations by these suspected dischargers to establish confirmed discharges; (3) ensuring that investigations are conducted to determine if a cause-and-effect relationship exists between a confirmed discharger and a polluted well; (4) referring each site where a responsible party has been determined to the appropriate State Board program manager (e.g., underground tanks) for cleanup; and (5) transferring sites to Superfund or to other appropriate programs when a responsible party cannot be determined.

(iii) Ground Water "Hot Spots" Study: This study was initiated by the State Board in 1983 with two main goals: (1) to develop and test a method for identifying ground water sites with a high potential for contamination by toxic substances, and (2) to locate previously unidentified areas

Table 4. Pesticides detected in the large water supply wells in the AB 1803 monitoring program.

Pesticide	County	No. of Wells Contaminated	Concentration (ppb)
DBCP	Fresno	99	0.01 - 6.6
	San Bernardino	21	0.01 - 6.8
	Merced	10	0.01 - 0.6
	Riverside	10	0.01 - 2.1
	Kern	5	0.01 - 0.28
	San Joaquin	4	0.11 - 4.11
	Stanislaus	2	0.02 - 0.32
	Madera	2	0.01 - 2.9
	Monterey	1	0.05
	Los Angeles	1	0.63 - 0.77
Atrazine	Los Angeles	36	0.5 - 2.4
	Siskiyou	1	0.3 - 0.6
Simazine	Los Angeles	20	0.5 - 1.9
	Riverside	4	0.51 - 2.02
	Orange	1	0.53 - 0.8
	Siskiyou	1	0.2 - 0.4
1,2-D	San Diego	1	1.2 - 1.5
	San Joaquin	1	0.8 - 1.0
	Tulare	1	0.8 - 1.0
	Kern	1	0.7

SOURCE: DHS, 1986

of ground water contamination in the State. Seven sites were selected for sampling in six counties: Fresno, Monterey, Los Angeles, Santa Clara, Santa Barbara, and Santa Cruz. Table 5 lists the pesticides detected in existing wells in the study area (Fischer and Reid, 1986).

The Regional Water Quality Control Boards are following up on these findings. State Board staff has initiated a supplementary study which involves installation of monitoring wells in the original Ground Water "Hot Spots" study areas where wells were either nonexistent or not suitable for sampling because of their location (upgradient) or depth. This study is in progress and results are not available.

Table 5. Pesticides detected in ground water samples in the Ground Water "Hot Spots" study.

Site	County	Well Type	Pesticide	Concentration (ppb)
Gilroy	Santa Clara	Irrigation	Endosulfan	0.37
Fresno	Fresno	Industrial	Prophan	6.0
Fresno	Fresno	Domestic	Dieldrin	0.05
			Endrin	0.12 - 0.21
			DBCP	0.33 - 0.56

B. REGIONAL WATER QUALITY CONTROL BOARDS (RWQCBs):

The nine Regional Water Quality Control Boards (Figure 1) as well as the State Board are required by the law to protect California's ground water and surface water from point and nonpoint source discharges of pollutants, including pesticides (Porter-Cologne Act of 1969, Federal Water Pollution Control Acts of 1972 and 1977). The Porter-Cologne Act enables the Regional Boards to regulate discharges through:

1. Adoption of water quality objectives in basin plans to protect specified beneficial uses of water in each of California's 15 watershed basins.

2. Requirement for dischargers to submit WDR (Waste Discharge Requirements) and NPDES (National Pollution Discharge Elimination System) permits for reporting the location, volume, and character of waste discharged.

3. Enforcement of cleanup actions through issuance of compliance schedules, Cease and Desist, or Cleanup and Abatement Orders, or civil fines.

Historically, nonpoint source discharges of pesticides (e.g., through agricultural runoff, erosion, and drift during aerial application) have been rarely regulated by the Regional Boards because of the difficulty in tracing problem events to their sources as well as lack of information indicating violations of standards.

Regional Boards' information on ground water pollution with pesticides, and measures taken by the Board to mitigate the problem are listed by Region in Tables 6 through 11.

Los Angeles Regional Board (Region 4) submitted AB 1803 large system well monitoring information on 37 wells found to be contaminated with the nematicide DBCP, and the herbicides atrazine and simazine. State and Regional Board staff have initiated an AB 1803 follow-up study as described earlier.

Lahontan and San Diego Regional Boards (Regions 6 and 9 respectively) reported no incidences of ground water contamination with pesticides.

FIGURE 1. California's Nine Regional Water Quality Control Boards.

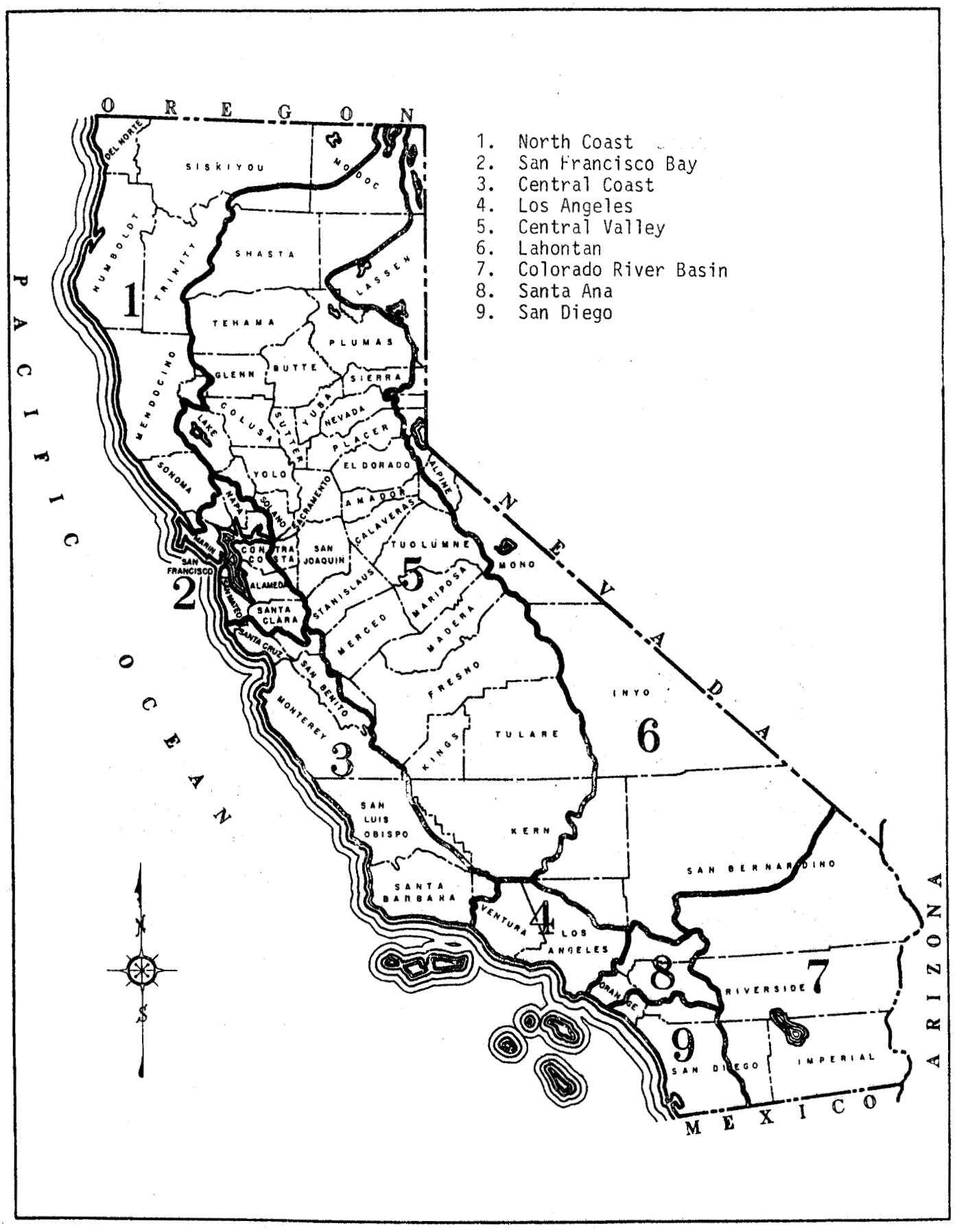

Table 6. Ground Water Contamination with Pesticides in the North Coast Region (Region 1).

County	Site	Pesticides	Concentration (ppb)	Mitigation Measures
Mendocino	--	Endosulfan Heptachlor	-- --	Agricultural use involved. Further investigations planned.
Humboldt	Sun Valley bulb farm	Daconyl	100	Well casing sealed.
	McKinleyville bulb farm	Aldicarb	>19	Use suspended by County Agricultural Commissioner.
Del Norte	School near Reguer	2,4-D	2-3	Aerial application involved. No action taken, since concentration was below State's Action Level of 100 ppb.
	Smith River Plains	Aldicarb 1,2-D	Up to 16 Up to 17	Agricultural use involved. Use of Temik (Aldicarb) and D-D (1,2-D) suspended by the County Agricultural Commissioner.
	County Agricultural Commissioner Waste Disposal Site	2,4-D 2,4,5-T 1,2-D	250 - 650 150 - 250 2,000 - 25,000	Site placed under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act).
Trinity	Sierra-Pacific sawmill	Pentachloro-phenol Tetrachloro-phenol	-- --	Enforcement activity involved ground water flushing.
Siskiyou/Modoc	Tulelake	1,2-D	--	Further investigation recommended.
	J.H. Baxter wood treatment plant in Weed	Pentachloro-phenol		Enforcement activity required construction of monitoring wells and ongoing monitoring program.

Table 7. Ground Water Contamination with Pesticides in San Francisco Bay Region (Region 2).

County	Site	Pesticides	Concentration (ppb)	Mitigation Measures
Contra Costa	Levin Metals, Richmond	DDT DDD	145 25	Cleanup and Abatement order issued. Remedial Action Plan to be submitted in Fall 1986.
	Chevron Chemicals, Richmond	Difolatan Orthene Chlordane Lindane Aldrin DDT/DDD Dieldrin	 0.9 0.4/0.4 	Katz exemption requirement submitted. RCRA (Resources Conservation and Recovery Act) ground water assessment ongoing.
	FMC Corp., Richmond	DDT/DDE Dieldrin Tedion		Remedial Action Plan submitted in spring 1986. Investigation ongoing.
	Dow Chemicals, Pittsburg	Vikane Dowcil 75 Dowcil 100		HAR (Hydrologic Assessment Report) submitted for Toxic Pits Control Act exemption. RCRA ground water assessment ongoing.
Alameda	FMC Corp., Newark	EDB		Cleanup and Abatement Order issued.
	Peerless Electric Company, Berkeley	Pentachloro-phenol		Remedial Action Plan to be submitted in Winter 1986.

Table 8. Ground Water Contamination with Pesticides in Central Coast Region (Region 3).

County	Site	Pesticide	Concentration (ppb)	Mitigation Measure
Santa Cruz	Western Farm Service: Green Gro, Watsonville	DDT	0.2	Cleanup and Abatement Order issued in January 1985. Currently regulated with Waste Discharge Requirements, Order No. 85-47.
		DDD	0.2	
		DDE	0.25	
		Toxaphene	0.84	
		Endosulfan I	0.05 - 0.14	
		Endosulfan II	0.05 - 0.25	
		Endosulfan Sulfate	0.05	

Table 9. Ground Water Contamination with Pesticides in the Central Valley Region (Region 5).

County	Site	Pesticide	Concentration (ppb)	Mitigation Measure
Fresno	Thompson Hayward Agriculture and Nutrition Co.	α-BHC	2.39	Cleanup and Abatement Order issued. Site on State Superfund.
		β-BHC	1.2-1.65	
		γ-BHC	0.01-0.04	
		Dieldrin	0.13-3.12	
		DBCP	0.01-48.8	
		Diphenamid	2,172	
		Heptachlor	0.02	
		Heptachlor epoxide	0.11	
	FMC Corp.	Aldrin	0.09	Site on State Superfund. Contamination Assessment Proposal requested.
		Dieldrin	0.01-5.7	
		DDT	0.12-1.6	
		DDD	0.01-0.16	
		DDE	0.03-3.0	
		Heptachlor	0.1-1.0	
		Lindane	0.01-1.0	
		Toxaphene	12.0	
		Ethyl parathion	0.03-1.0	
		Malathion	0.02-3.0	
		Ethion	0.3-2.0	
		Thiodan	0.02-19.0	
		Dimethoate	0.2-70.0	
		Furadan	0.12-900.0	
		DNOC	1.0	
		DNBP	0.53-72.0	
	Agro-West, Inc.	BHC	0.21-0.47	Site on State Superfund. Hydrogeologic Assessment Report requested pursuant to the Toxic Pits Cleanup Act.
		Dicofol	12.24	
		Endosulfan	0.06	
		Dacthal	1.8-208.0	
		2,4-D	0.6	
		Diuron	2.7	
		Methomyl	7.7	
		Neburon	1.4	
		Propham	31.2	

Table 9. Ground Water Contamination with Pesticides in Central Valley Region (Region 5) (continued).

County	Site	Pesticide	Concentration (ppb)	Mitigation Measure
	Britz, Inc. Five Points	Toxaphene	0.039-0.042	Site on State Superfund. Contamination Assessment and Closure Plans requested.
Kern	Brown & Bryant, Inc. Arvin	1,2-D	1-550,000	Site on State Superfund. Contamination Assessment Report requested.
		1,3-D	50,442-130,000	
		DBCP	13,846-28,000	
		EDB	15,000-26,800	
		Dinoseb	0.14-9,433	
	Puregro Co. Bakersfield	DBCP	0.04	Site on State Superfund. Contamination Assessment and Closure Plans for drywell requested.
	Guimarra Vineyards Edison	DBCP	1.7-3.3	Contamination Assessment and Pond Closure Plan requested (J.R.Simplot-Edison).
	Wasco Airport	Aldrin	Trace	Site on State Superfund Cleanup and Abatement Order issued.
		Lindane	9-46	
		Endrin	38-40	
		Chlordane	22-7,800	
		Methoxychlor	8,900	
		DDT	0.2	
		DDD	Trace	
		DDE	2.5	
		Thimet	3-20	
		Malathion	5-23	
		Methyl parathion	26	
		Paraoxon	6-40	
		Di-systron	1	
		Omite	55-690	
		Paraquat	10	

Table 9. Ground Water Contamination with Pesticides in Central Valley Region (Region 5) (continued).

County	Site	Pesticide	Concentration (ppb)	Mitigation Measure
Madera	Western Farm Service, Inc.	Dinoseb	350	Hydrogeological Assessment Report requested for conformance with Toxic Pits Cleanup Act.
Tulare	Mefford Field, City of Tulare	p,p'-DDT	0.1	Contamination Assessment and Mitigation Reports requested.
		p,p'-DDE	0.6	
		2,4,5-TP	12	
		Dicamba	43	
		DNBP	500	
		Diuron	4-200	
Merced	City of Turlock Airport	Dieldrin	0.09	Contamination Assessment and Pond Closure Plans requested.
		Propham	4.0	
		Neburon	0.4-1.0	
San Joaquin	Occidental Chemicals, Lathrop	2,4-D	2.8-7.2	Administrative Civil Liability has been imposed. Cease and Desist Order issued. Under litigation by Attorney General.
		2,4,5-T	1.2-929	
		DEF	1.7	
		Toxaphene	8.2	
		Lindane	0.32-14.8	
		EDB	1.0-380	
		Dieldrin	0.3	
		Delnav	4.1-31.0	
		Dimethoate	7.8-16.0	
		Disulfoton	2-6.2	
		Sevin	30-80	
		Heptachlor	0.45	
		Chlordane	0.5	
		DDT	0.9	
		DDE	0.59	
		DDD	0.10	
		Aldrin	0.05	

Table 9. Ground Water Contamination with Pesticides in Central Valley Region (Region 5) (continued).

County	Site	Pesticide	Concentration (ppb)	Mitigation Measure
San Joaquin (cont.)		Methyl parathion	2.5	
		Ethyl parathion	3.3-11.3	
Stanislaus	Chemurgic	Aldrin	0.07-180	Contamination Assessment Report requested.
		α-BHC	0.05-240	
		β-BHC	0.06-430	
		δ-BHC	0.17-110	
		γ-BHC	0.06-500	
		o,p'DDD	7.4-16	
		p,p'DDD	0.06-28	
		p.p'DDE	0.53-3.8	
		p,p'DDT	0.15-30.0	
		Endosulfan I	0.25	
		Endosulfan II	0.25	
		Endosulfan sulfate	0.31	
		Endrin	0.13-28	
		Heptachlor	0.04-13	
		Heptachlor epoxide	1.2-3.8	
Sacramento	Sacramento Army Depot	Diazinon	5.0-9.0	Assessment Report requested.
		Dursban	20.0-90.0	
		Lindane	2.0	
Yolo	Frontier Fertilizer Co., Davis	EDB	13.4	Cleanup and Abatement Order issued.

Table 10. Ground Water Contamination with Pesticides in Colorado River Basin (Region 7).

County	Site	Pesticide	Concentration (ppb)	Mitigation Measure
Riverside	Desert Fruit Ranch, Coachella Valley	DBCP	1.0-2.4	Referred to California Department of Health Services.
	Cy Mouradick Ranch	DBCP	1.2-1.6	Referred to California Department Health Services.

Table 11. Pesticide Contamination with Pesticides in Santa Ana Region (Region 8)*.

County	Site	Pesticide	Concentration (ppb)	Mitigation Measure
Riverside	11th Street, City of Riverside	DBCP	1.3	None (agricultural well).
	Fill, City of Riverside	DBCP	1.5	None (agricultural well).
	La Quinter Ridge	Aldrin	0.03	None.
San Bernardino	City of Redlands (13 wells)	DBCP	0.02-2.0	None (agricultural wells).

* The Regional Board also provided information on AB 1803 large water supply monitoring program. DBCP and simazine were detected in 43 drinking water supply wells in this Region.

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Litwin, Y. J., N. N. Huntzsche, and N. A. George. 1983. Ground Water Contamination by Pesticides: A California Assessment. Report prepared by Ramlit and Associates for Toxic Substances Control Program, State Water Resources Control Board.

APPENDICES

APPENDIX A

SUMMARY OF WELL STUDIES INCLUDED IN THE DATA BASE

Data from the following studies are included in the well inventory:

I. DEPARTMENT OF FOOD AND AGRICULTURE (CDFA)

Agency No. 4323: Environmental Hazards Assessment Program (EHAP):

Study No. 13 Pesticide Movement to Ground Water, Vol. I: Survey of Ground Water Basins for Carbofuran, DBCP, EDB, and Simazine. D.J. Weaver, R.J. Sava, F. Zalkin and R.J. Oshima. Counties in sampling were: Contra Costa, Fresno, Kern, Kings, Madera, Merced, Monterey, Riverside, San Bernardino, San Joaquin, San Luis Obispo, Santa Barbara, Santa Cruz, Stanislaus, Tulare Counties; May-July 1982. 217 wells sampled.

Study No. 14 Monitoring Selected Ground Water Basins for the Presence Of Aldicarb. R.J. Oshima, G. Torres, S.J. Nelson and T.M. Mischke. Aldicarb study conducted in conjunction with SWRCB and CDHS in Kern and Monterey Counties, November 1979. 14 wells sampled.

Study No. 25 Sampling of individual wells as requested. Dimethoate, malathion, molinate; Yolo County; November, 1984. Five wells sampled.

Study No. 34 Monitoring for the Presence of Atrazine and Simazine in Well Water and Soil in Glenn Couty, 1986. Subsequent sampling of additional wells to confirm the initial wells. Alachlor, atrazine, carbofuran, CB, CH, and OP screens, metolachlor, molinate, prometon, simazine, thiobencarb; February 1985. 135 wells. (In press).

Study No. 35 Monitoring of wells to determine the extent of ground water contamination by Ordram (molinate) in the vicinity of Corning, California. Subsequent sampling of wells near an initially contaminated well. Molinate and molinate sulfoxide; Tehama County; July-August 1984. 25 wells sampled.

Study No. 36 Report on Monitoring for Alachlor in Well Water: I. Sampling in the Sacramento Valley. R. Welling, S. Nicosia; Solano County; March 1986. Eight wells.

Study No. 37	Telone study conducted in conjunction with Dow Chemical; chloroallyl alcohol, 1,2-D, 1,3-D; Fresno County; October 1984 and April 1985. Four wells.
Study No. 38	Bromacil, diuron, simazine, study in Tulare and Ventura Counties; January - March 1986. 23 wells sampled. (Report in progress).
Study No. 39	Survey of Yolo County Migrant Worker and Rural School Water Wells for the Presence of Agricultural Chemicals. CB, CH, and OP screens, DBCP, disulfoton, EDB; July 1985. 27 wells sampled.
Study No. 40	Survey of Molinate and Thiobencarb Concentrations in Ground Water. Molinate, molinate sulfoxide, thiobencarb, thiobencarb sulfoxide; Butte, Colusa, Fresno, Glenn, Kern, Kings, Madera, Merced, Placer, Sacramento, San Joaquin, Stanislaus, Sutter, Tehama, Tulare, Yolo, Yuba Counties; September 1985. (Report in progress).
Study No. 41*	Survey of Herbicides in Well Water, Tulare County. Diuron, simazine; 1986. 110 wells sampled. (Report in progress).
Study No. 43	Sampling of individual wells as requested. Yolo County: alachlor, CB, CH, OP, and TZ screens, DBCP, disulfoton; Lake County: amitraz, ethion; June 1985, April 1986.
Study No. 44	One domestic and two observation wells sampled to confirm the presence of bromacil; Sutter County; February 1986.
Study No. 45	Study conducted in conjunction with RWQCB; aldicarb, aldicarb sulfone, fenamiphos, fenamiphos sulfone and sulfoxide, nemacur, nemacur sulfone and sulfoxide; Del Norte County; June 1985. Three wells sampled.
Study No. 46	Sampling of individual wells as requested. Azinphos-methyl, carbofenothion, carbofuran, CH and OP screens, dicofol, endosulfan, ethion, simazine, toxaphene; Lake and Mendocino Counties; April 1986. Five wells sampled.

Agency No. 4323: (Worker Health and Safety Branch)

Study No. 06 A Survey of Well Water in Selected Counties of California for Contamination by EDB in 1983. C. Smith, S. Margetich, A.S. Fredrickson: Report no. HS-1123; Fresno, Kern, Merced, Monterey, San Diego, San Joaquin, Solano, Stanislaus, Ventura Counties; June-August 1983. 130 wells.

Study No. 07 A Study of Samples of Well Water Collected in California in May 1979 from Selected Areas Where 1,2-dibromo-3-chloropropane (DBCP) had been Applied to Soil During the Period from 1960 Through July 1977 to Determine the Presence of DBCP and Certain Other Pesticide Residues. S.A. Peoples, K. T. Maddy, B. Cusick, T. Jackson, C. Cooper and A. S. Fredrickson: Reports No. HS-623 and HS-623(a) DBCP well survey including analyses for aldrin, chlordane, 1,3-D, DDD, DDE, DDT, dicofol, EDB, endosulfan and endosulfan isomers, heptachlor, heptachlor epoxide, lindane, pentachlorophenol, tedion; Fresno, Merced, Riverside, San Joaquin, Stanislaus, Tulare, Ventura, Yolo Counties; 1979-1980.

Study No. 08 A Study and Analysis of the Migration Potential of Atrazine into Selected Aquifers in Selected Counties of California in 1981. K.T. Maddy, F. Schneider, H.R. Fong and A.S. Fredrickson: Report no. HS-890; Fresno, Merced, San Joaquin Counties; 1981. 15 samples.

Study No. 09 Analysis of Water from Wells in Selected California Communities for Residues of 1,3-dichloropropene, 27 Organophosphates and 23 Chlorinated Hydrocarbons Used as Pesticides. K.T. Maddy, W.G. Cusick, F. Schneider, H. Fong, D. Conrad, S. Fredrickson and S. Margetich: Report no. HS-854; CH and OP screens, DD, Telone; Fresno, Kern, Merced, San Joaquin, Santa Barbara Counties; January 1981. 54 wells sampled.

Study No. 10 — A Study of Ground Water from Selected Areas in California in 1981 for Cis- and Trans-Chloroallyl Alcohols, the Primary Degradation Products of 1,3-dichloropropene (Telone II). K.T. Maddy, J. Lowe, A.S. Fredrickson and S. Margetich: Report no. HS-891; Fresno, Merced Counties; June 1981. Eight samples.

Study No. 11 — Report no. HS-1001(a): chloroallyl alcohol, 1,3-D and 49 chlorinated hydrocarbons and organophosphates; (summary of HS-854).

Study No. 12 — A Study of the Possible Presence of Carbofuran and its Metabolites in Ground Water. K.T. Maddy, D. Richmond and N. Siani: Report no. HS-871; Fresno, Kern, San Joaquin, Stanislaus, Tulare Counties; 1981. Six wells, six samples.

Study No. 22 — A Survey of Well Water in Selected Counties of California in 1983 for Possible Contamination by 1,2-dichloropropane. C. Smith, S. Margetich and A.S. Fredrickson: Report no. HS-1160; Fresno, Kern, Merced, Monterey, San Diego, San Joaquin, Solano, Stanislaus, Ventura Counties; June-August 1983. 130 wells (same wells as in HS-1123).

II. DEPARTMENT OF HEALTH SERVICES (CDHS)

Agency No. 5060:

Study No. 01 — EDB well sampling in the central valley; Fresno and Kern Counties; spring and summer 1983.

Study No. 02 — Fruitvale Ground Water Quality Study. EDB, 1,2-D; Kern County; August 1982, March 1983. 35 wells.

Study No. 03 — Region 5 DBCP well sampling; San Joaquin, Stanislaus, Fresno, Kern, Madera, Merced, Tulare Counties; 1979-1984.

Study No. 04 — Santa Barbara District DBCP and EDB well sampling; San Luis Obispo, Santa Barbara, Ventura Counties; DBCP: July-September 1979; EDB: October and December 1983.

Study No. 05 Redding District; DBCP well sampling; Butte, Colusa, Sutter, Glenn Counties; 1979-1983.

Study No. 23 AB1803 data; large water system wells; statewide.

Study No. 28 San Diego region: DBCP well survey; San Bernardino, San Diego, Riverside, Imperial Counties; 1975-1986. Approximately 300 wells sampled.

III. COUNTY ENVIRONMENTAL HEALTH DEPARTMENTS

Agency No. 5112: Fresno County Health Department

Study No. 17 County-wide DBCP monitoring; 1979-1983.

Study No. 18 County-wide DBCP monitoring; per-owner request; 1981-1983.

Agency No. 1896: San Mateo County Environmental Health Department

Study No. 33 Ground water monitoring in Pescadero; 46 chemicals. Eight wells sampled.

IV. STORET Data (DWR and CDHS)

Agency No.s 5050 and 5060:

Study No. 19 aldrin, chlordane, 2,4-D, DBCP, DDT, dieldrin, endrin, heptachlor, heptachlor epoxide, lindane, methoxychlor, PCP, silvex, toxaphene; Fresno, Kings, Tulare Counties; 1975-1983. 22 wells sampled.

V. REGIONAL WATER QUALITY CONTROL BOARDS (RWQCB)

Agency No. 5084: Region 4

Study No. 15 Various contaminants; Los Angeles and Ventura Counties; May and June 1982. 48 wells sampled.

Agency No. 2894: Region 1

Study No. 21 Control of Pesticide Discharges to North Coast Waters. Staff report; February, 1985; aldicarb and 1,2-D; Del Norte county; January 1983-March 1984.

Study No. 42 — Follow-up sampling to study No. 21; aldicarb, 1,2-D; Del Norte County; February 1984 - June 1986. 36 wells sampled.

Agency No. 5088: Region 8

Study No. 32 — DBCP; San Bernardino County; March - May 1986; 36 wells.

VI. STATE WATER RESOURCES CONTROL BOARD (SWRCB)

Agency No. 5056:

Study No. 16 — 1,2-dichloropropane (1,2-D), 1,3-dichloropropene (1,3-D). D.B. Cohen, D. Gilmore, C. Fischer and Q.W Bowes: 1,2-D, 1,3-D; Fresno, Merced, San Joaquin Counties; 1982. 95 wells sampled.

Study No. 20 — EDB study; Fresno, Kern, Merced, San Joaquin, Santa Barbara, Stanislaus, Tulare, Yolo Counties; 1982-1983.

VII. COUNTY AGRICULTURAL DEPARTMENTS

Agency No. 5104: Yolo County

Study No. 30 — Yolo County wells sampled for CH and OP screens, 2,4-D, DD, EDB, 2,4,5-T; September and October, 1985. Three wells sampled.

VIII. CITY PUBLIC WORKS DEPARTMENTS

Agency No. 3346: City of Davis

Study No. 31 — 2,4-D, endrin, lindane, methoxychlor, toxaphene, 2,4,5-TP; Yolo county; December 1984. One well sampled.

* Indicates studies that have been identified with a code number but will be included in the inventory at a later date.

APPENDIX B

FORMAT OF DATA SHEETS

Each chemical analysis for a pesticide residue in a well water sample constituted one record in the data base. Each record contains 132 columns of data. The following is an explanation of the format:

a. County code (Columns 1-2): The 2-digit state code for counties was used, so as to coincide with the CDFA Pesticide Use Report format.

b. Township/range/section/tract/sequence number (Columns 3-13): This is the U.S. Geological Survey's Public Lands Survey Coordinate System (Davis and Foote, 1966) used by the DWR to numerically identify individual wells. Township lines (T) are oriented from north to south and are 6 miles long. Range lines (R) are oriented east to west and are 6 miles wide. A 6 X 6 mile township is divided into 36, 1 mile by 1 mile sections (S), numbered consecutively from 1 to 36. Each section is again divided into 16 individual 40 acre tracts (Tr) that are identified by letters (A through P). In some cases, wells in a tract are further identified with a sequential number in the order of identification by the DWR. Most large water system wells have this sequence number, while most private wells do not.

   Many sampled wells had their T/R/S location indicated on data sheets or in a final report. The state well numbers for large system wells were found by cross-referencing the names of the well and water district to the well number in the CDHS station location file. This file is stored on the State Water Quality Information System (SWQIS) data base, which files large system wells by district, county, station name, well name and/or number.

   Tract letter and numbers for all wells were included when available. Private wells lacking T/R/S location were omitted from the main file because it was not possible to accurately locate them. In the future, wells should be identified by the complete, DWR-assigned state well number, as this number is now a minimum requirement for all submitted data.

c. Base line and meridian (Column 15): These lines divide the state into three areas: Humboldt, Mount Diablo and San Bernardino, forming the basic structure for the Township/Range/Section numbering system.

d. Columns 16, 17, 70 and 112 = blank spaces.

e. Study number (Columns 18-19): Numbers were assigned consecutively as studies were obtained.

f. Sampling agency code (Columns 20-23): Numbers were originally assigned consecutively to each contributing agency. The original codes were replaced with the DWR 4-digit code to increase compatibility of state data bases.

g. Date (Columns 24-29): In the original data base, only month and year of sample were recorded. For a well sampled more than once a month, each month's results were averaged. Day, month and year of each sampling record will be included for data added in 1986, and in the future. The middle month of an indicated period was used when the date given was only a season, e.g., "all samples were taken in spring of 1982." However, the precise sampling date was recorded for most studies.

h. Chemical code (Columns 30-34): Each chemical was assigned a 5-digit chemical code, corresponding to the chemical code used in the Pesticide Use Reporting System maintained by the Information Services Branch, CDFA. Breakdown products of pesticides were included, and were specially marked with an asterisk to distinguish them from the parent compound, e.g., 00262 = endrin, while *0262 = endrin aldehyde. This list will be updated as necessary.

i. Sample type (Column 35): This field was the "Value Code" column in the 1985 report, with an "A" for averaged values and an "O" for single observations. Data from the 1985 data base have retained the "A" and "O" codes, but new data are identified as either initial, confirmation, split or non-detected.

j. Chemical concentration (Columns 36-41): Analytical results were recorded in parts pers billion (ppb), in scientific notation. Cols. 36-39 are the significant figures, col. 38 is the sign of the exponent (+ or -), and col. 40

is the exponent (power of 10). Trace amounts, non-detected, or less than the minimum detectable limit values were all recorded as non-detected (0.00+0).

k. Minimum detectable limit (MDL) (Columns 42-47): The MDL for the chemical assay was recorded in ppb, in the same format as chemical concentration. The MDL for a given compound often varied by laboratory, date, or year, reflecting differences in analytical techniques. MDL values were not always available. Special attention should be paid to this information because the significance of a negative result should be weighed against the MDL recorded.

l. Analyzing laboratory (Columns 48-51): This new data field is included in the minimum reporting requirements list. Data submitted from samples taken after December 1,1986 must include this information.

m. Method of analysis (Column 52): This minimum reporting requirement is also a new field. We have decided to limit the specification of analytical method to : EPA-approved, In-house, or Pesticide Analytical Method (PAM) at this time. Very few records currently in the data base contain this information.

n. Date of analysis (Columns 53-58): Month/day/year. This too is a new field and is included in the minimum reporting requirements. Most records currently in the data base do not have this information.

o. File code (Columns 59-62): Internal file designation.

p. Summary year (Columns 63-64): This indicates the year of the Well Inventory Summary Report in which each record appears in. This will be used for extracting from the main file only that data to be included in yearly updates.

q. Well location information (Columns 65-114): These fields designate specific well locations so that each record is identified with the well from which it came. This information is for internal CDFA use only.

r. - w. Well-specific information (Columns 115-131): Water well driller's reports, or well logs, contain valuable well construction information such

as completed well depth and perforation depths. However, well log information is available in only a few studies.

r. Well depth (in feet) (Columns 115-118): This is the completed well depth, as recorded on a well driller's log, or given verbally by a well owner.

s. Depth to top of perforation (in feet) (Columns 119-121): Taken from a well log.

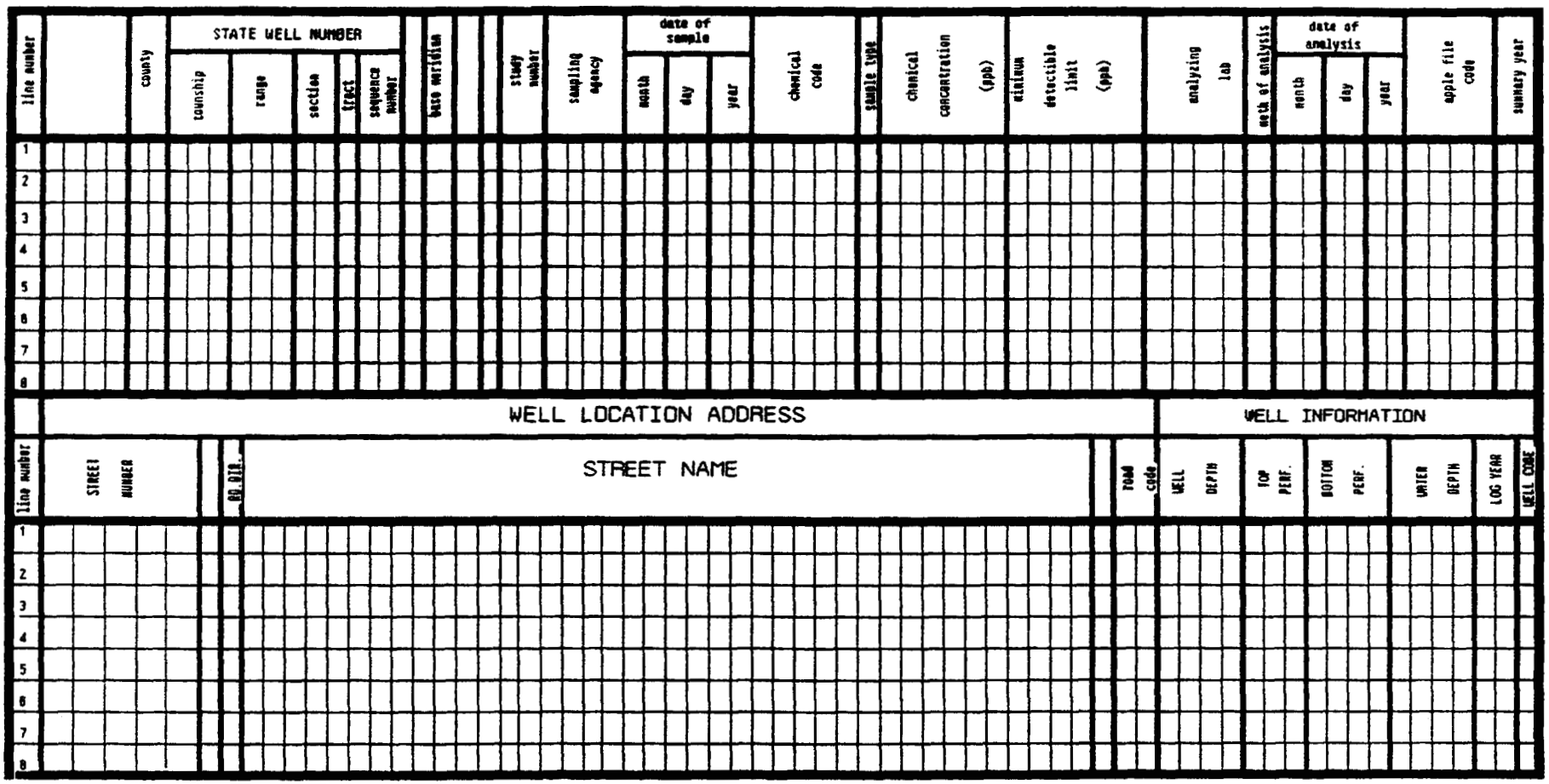
t. Depth to bottom of perforation (in feet) (Columns 122-125): Taken from a well log; often corresponded to depth of completed well.

u. Water depth (Columns 126-129): The value originally recorded in this field was "depth to standing water after well development," as recorded in the well driller's log. This depth now corresponds to depth of standing water at sampling time.

v. Log year (Columns 130-131): Year the well was drilled; information obtained from well log, raw data, or verbally from a well owner.

w. Well code (Col. 132): This code indicates well use, e.g., private domestic or irrigation well, or both.

WELL INVENTORY FORMAT



APPENDIX C

EXPLANATION OF CODES

I. County Code*

Code	County	Code	County	Code	County
01	Alameda	21	Marin	41	San Mateo
02*	Alpine	22*	Mariposa	42	Santa Barbara
03	Amador	23	Mendocino	43	Santa Clara
04	Butte	24	Merced	44	Santa Cruz
05	Calaveras	25	Modoc	45	Shasta
06	Colusa	26	Mono	46	Sierra
07	Contra Costa	27	Monterey	47	Siskiyou
08	Del Norte	28*	Napa	48	Solano
09	El Dorado	29*	Nevada	49	Sonoma
10	Fresno	30	Orange	50	Stanislaus
11	Glenn	31	Placer	51	Sutter
12	Humboldt	32	Plumas	52	Tehama
13	Imperial	33	Riverside	53*	Trinity
14	Inyo	34	Sacramento	54	Tulare
15	Kern	35	San Benito	55	Tuolumne
16	Kings	36	San Bernardino	56	Ventura
17	Lake	37	San Diego	57	Yolo
18	Lassen	38	San Francisco	58	Yuba
19	Los Angeles	39	San Joaquin		
20	Madera	40	San Luis Obispo		

* Counties not included in the inventory.

II. Base Meridian Code

H = Humboldt

M = Mt. Diablo

S = San Bernardino

III. Well Study Code

Code	Agency	Pesticide
01	CDHS	EDB
02	CDHS	1,2-D, EDB
03	CDHS	DBCP
04	CDHS	DBCP, EDB
05	CDHS	DBCP
06	CDFA	DBCP
07	CDFA	aldrin, chlordane, 1,3-D, DBCP, DDD, DDE, DDT, dicofol, EDB, endosulfan and endosulfan isomers, heptachlor, heptachlor epoxide, lindane, methoxychlor, pentachlorophenol, tedion
08	CDFA	atrazine
09	CDFA	DD mix, Telone
10	CDFA	cis/trans chloroallyl alcohol
11	CDFA	cis/trans chloroallyl alcohol, chlorinated hydrocarbons, 1,3-D, organophosphates
12	CDFA	carbofuran
13	CDFA	carbofuran, DBCP, EDB, simazine
14	CDFA	aldicarb
15	RWQCB	aldrin, BHC-isomers, chlordane, DDD, DDE, and DDT isomers, dieldrin, endosulfan, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, lindane, toxaphene
16	SWRCB	1,2-D, 1,3-D
17	FCHD	DBCP
18	FCHD	DBCP

19	CDHS, DWR (STORET data);	aldrin, chlordane, 2,4-D, DBCP, DDT, dieldrin, endrin, heptachlor, heptachlor epoxide, lindane, methoxychlor, silvex, toxaphene
20	SWRCB	EDB
21	RWQCB	aldicarb, 1,2-D
22	CDFA	1,2-D
23	DHS	Large systems well monitoring data (AB 1803)
25	CDFA	CH screen, dimethoate, glyphosate, malaoxon, malathion
28	DHS	DBCP
30	YCAD	(Yolo Co. Ag. Dept.); DD, EDB
31	DPW	(Davis Public Works); 2,4-D, endrin, lindane, methoxychlor, toxaphene, 2,4,5-TP
32	RWQCB	DBCP
33	SMEHD	(San Mateo Env. Health Dept.); aldicarb, aldrin, aminocarb, bendiocarb, a-BHC, b-BHC, d-BHC, bufencarb, carbamult, carbaryl, carbofenothion, carbofuran, a-chlordane, y-chlordane, op-DDD, ppl-DDD, op-DDE, ppl-DDE, op-DDT, ppl-DDT, DEF, diazinon, dieldrin, dioxacarb, dioxathion disulfoton, endrin, ethion, ethyl parathion, lindane, heptachlor, heptachlor epoxide, malathion, mesurol, methomyl, methoxychlor, methyl parathion, mirex, PCNB, perthane, phorate, propoxur, tetradifon, thiodan I & II, toxaphene
34	CDFA	alachlor, atrazine, CB,CH and OP screens, carbofuran, metolachlor, molinate, prometon, thiobencarb
35	CDFA	CH and OP screens, molinate, molinate sulfoxide
36	CDFA	Alachlor, metolachlor
37	CDFA	chloroallyl alcohol, Telone (1,2-D, 1,3-D)
38	CDFA	bromacil, diuron, simazine
39	CDFA	CB, CH and OP screens, DBCP, disulfoton, EDB
40	CDFA	molinate, molinate sulfoxide, thiobencarb, thiobencarb sulfoxide
42	RWQCB	aldicarb, 1,2-D
43	CDFA	alachlor, amitraz, azinphos-methyl, CB, CH, OP and triazine (TZ) screens, DBCP, disulfoton, EDB, ethion, fenbutatin-oxide, fenvalerate, metolachlor, permethrin

44	CDFA	bromacil
45	CDFA	aldicarb, aldicarb sulfone, fenamiphos, fenamiphos sulfone and sulfoxide, nemacur, nemacur sulfone and sulfoxide
46	CDFA	azinphos-methyl, carbofenothion, carbofuran, CH and OP screens, dicofol, endosulfan, ethion, simazine, toxaphene

IV. Sampling Agency Code

Code	Agency Name
3346	Anatec Lab (Davis Public Works study)
5060	CDHS (Sanitary Engineering Branch)
5050	DWR
4323	CDFA, Environmental Hazards Assessment Program
4323	CDFA, Worker Health and Safety Program
5112	Fresno County Health Dept.
2894	RWQCB, Region 1 (North Coast)
5084	RWQCB, Region 4 (Los Angeles)
5088	RWQCB, Region 8 (Santa Ana)
1896	San Mateo County (Environmental Health Dept.)
5056	SWRCB
5104	Yolo County (Agriculture Dept.)

V. Chemical Codes

00506	1,2-D (propylene dichloride)
00573	1,3-D (1,3 dichloropropene)
00639	2,4,5-T
00636	2,4-D (dichlorophenoxy acetic acid)
*0786	4-CLOC (4-chloro-o-cresol)
90359	BHC (all isomers)
00185	D-D mix
00183	DBCP (dibromochloropropane)
00179	DCPA (chlorthal-dimethyl)
00184	DDD
02092	DDE
00186	DDT
00187	DDVP
00190	DEF (s,s,s-tributylphosphorotrithioate)
00533	DNOC, sodium salt
00271	EDB (ethylene dibromide)
00263	EPN
00264	EPTC (s-ethyl dipropylthiocarbamate)
00788	MCPA (no salt)
00786	MCPA, dimethylamine salt
00641	MCPB, sodium salt
00034	MSMA
00464	PCNB
00465	PCP (pentachlorophenol)
01685	acephate
00003	acrolein
00678	alachlor
00575	aldicarb
*0575	aldicarb sulfone
00009	aldrin
00018	ametryn
****1	aminocarb
02016	amitraz
00020	amitrole
****2	atraton
00045	atrazine
****3	azinophos-ethyl
00314	azinophos-methyl
01924	bendiocarb
00053	benefin (benfluralin)
01552	benomyl
00070	bensulide
01944	bentazon, sodium salt
00083	bromacil
00091	bufencarb
00565	butylate
00104	captan

Chemical codes (continued)

00105	carbaryl
02176	carbendazim
00106	carbofuran
00110	carbophenothion
00130	chlordane
00347	chlordecone
00300	chlordimeform
*0573	chloroallyl alcohol (cis/trans)
00132	chlorobenzilate
00136	chloropicrin
00677	chlorothalonil
00141	chlorpropham
00253	chlorpyrifos
00171	creosote
01640	cyanazine
00516	cycloate
00180	dalapon
00566	demeton
00198	diazinon
00200	dicamba
00346	dicofol
00072	dicrotophos
00210	dieldrin
00216	dimethoate
00238	dinoseb
****8	dioxacarb
00192	dioxathion
00226	diphenamid
00230	disulfoton
00231	diuron
00259	endosulfan
*0259	endosulfan sulfate
00260	endothall
00262	endrin
*0262	endrin aldehyde
00268	ethion
00008	ethyl alcohol
00472	ethylan
01857	fenamiphos
*1857	fenamiphos sulfone
$1857	fenamiphos sulfoxide
01876	fenbutatin-oxide
01963	fenvalerate
01848	fluchloralin
00295	formaldehyde
01855	glyphosate, isopropylamine salt
00317	heptachlor

Chemical codes (continued)

*0317	heptachlor epoxide
00321	hexachlorobenzene
01871	hexazinone
00359	lindane (gamma-BHC)
*0367	malaoxon
00367	malathion
00369	maneb
00293	merphos
01697	methamidophos
01689	methidathion
00375	methiocarb
00383	methomyl
00384	methoxychlor
00385	methyl bromide
00394	methyl parathion
00388	methylene chloride
01996	metolachlor
00480	mevinphos
00402	mirex
00449	molinate
*0449	molinate sulfoxide
00052	monocrotophos
00418	naled
01728	napropamide
00592	nitrofen
01868	oryzalin
00452	ovex
01910	oxamyl
00382	oxydemeton-methyl
00458	paraquat (bis(methylsulfate))
00459	parathion
01929	pendimethalin
02008	permethrin (cis and trans)
00478	phorate
00479	phosalone
00335	phosmet
00482	phosphamidon
01897	profluralin
****9	promecarb
00499	prometon
00502	prometryn
00445	propargite
00504	propazine
00339	propham
00062	propoxur
00694	propyzamide (pronamide)

Chemical codes (continued)

00510	pyrethrins
00517	ronnel
***CB	screen (carbamate)
***CH	screen (chlorinated hydrocarbon)
***OP	screen (organophosphate)
***TZ	screen (triazine)
00530	silvex (2,4,5-TP)
00531	simazine
****5	simetryn
00135	sodium chlorate
00532	terbacil
01691	terbutryn
00305	tetrachlorvinphos
00581	tetradifon
00586	thanite
01933	thiobencarb
*1933	thiobencarb sulfoxide
00594	toxaphene
02133	triadimefon
****7	trichloronate
00088	trichlorophon
00597	trifluralin
01987	vernolate
00627	zineb
00629	ziram

VI. Sample Type Code

A = Averaged value (1985 data only)

C = Confirmation sample; method of confirmation unknown

D = Confirmation sample, but different from initial sample, (i.e., replicate sample, or sample taken within (30) days of first sample); analyzed by same or different lab

I = Initial (unconfirmed) positive sample

L = Confirmed initial sample by a different lab

M = Confirmed initial sample by second analytical method (i.e., mass spec, and therefore qualitative only; result reported is from initial analysis)

N = Single sample, negative results

O = Single observation (1985 data only)

S = Split sample, when all splits are negative

- = Not possible to determine if sample was confirmed or not

VII. Analyzing Lab Code:

Code	Lab Name
3346	Anatec, Inc. Lab
5991	Anlab, Analytical Laboratory - Dewante & Stowell
2371	Apple Lab
4792	Associated Laboratory
9527	California Analytical Lab (CAL LAB)
5073	Cal. Dept. Fish and Game - Nimbus Lab
4323	Cal. Dept. Food and Agriculture Lab
5060	Cal. Dept. Health Services - Berkeley Lab
5091	Cal. Dept. Health Services - So. Cal. Lab
2217	Chevron Chemical Lab - Richmond
9054	City of Sacramento, American River Water Treatment Plant
3334	North Coast Lab
4775	Shell Chemical - Martinez Lab

9465	Shell Chemical - Pittsburg Lab
9515	Shell Chemical - Salida Lab
6213	Stauffer Chemical Lab - Martinez
8046	Stauffer Chemical Lab - Richmond
9598	Stauffer Chemical Lab - Southgate
9250	Union Carbide Corporation Lab

VIII. Method of Analysis Code

E = EPA approved Method
I = In-house
P = P.A.M. (Pesticide Analytical Method)

IX. Road Code

AV = Avenue
BL = Boulevard
CR = Circle
CT = Court
DR = Drive
HY = Highway
LN = Lane
PL = Place
RD = Road
RT = Route
ST = Street
WY = Way

X. Well (Type) Code

B = Both I and D

C = Community well

D = Domestic (private) well

I = Irrigation (agricultural) well

L = Large Water System well

N = Non-community well

S = State Small Water System well

T = Test or monitoring well

U = Unknown type of well

X = Irrigation and industrial well

Y = Industrial well

APPENDIX D

RESULTS BY COUNTY AND
BY PESTICIDE ACTIVE INGREDIENT

COUNTY: Alameda

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	29/ 68	29/ 68
1,3-D	0/ 0	30/ 69	30/ 69
BHC (all isomers)	0/ 0	4/ 8	4/ 8
DDD	0/ 0	4/ 4	4/ 4
DDE	0/ 0	4/ 4	4/ 4
DDT	0/ 0	4/ 4	4/ 4
PCP	0/ 0	1/ 1	1/ 1
acephate	0/ 0	1/ 2	1/ 2
aldicarb	0/ 0	3/ 4	3/ 4
aldrin	0/ 0	4/ 4	4/ 4
atrazine	0/ 0	1/ 2	1/ 2
azinophos-methyl	0/ 0	2/ 2	2/ 2
benomyl	0/ 0	22/ 23	22/ 23
captan	0/ 0	20/ 20	20/ 20
carbaryl	0/ 0	22/ 23	22/ 23
carbendazim	0/ 0	19/ 20	19/ 20
chlordane	0/ 0	4/ 4	4/ 4
chloropicrin	0/ 0	12/ 13	12/ 13
demeton	0/ 0	4/ 4	4/ 4
diazinon	0/ 0	4/ 4	4/ 4
dicofol	0/ 0	22/ 23	22/ 23
dieldrin	0/ 0	4/ 4	4/ 4
dimethoate	0/ 0	15/ 15	15/ 15

COUNTY: Alameda

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dinoseb	0/ 0	14/ 15	14/ 15
diphenamid	0/ 0	14/ 14	14/ 14
diuron	0/ 0	10/ 10	10/ 10
endosulfan	0/ 0	16/ 34	16/ 34
endosulfan sulfate	0/ 0	4/ 4	4/ 4
endrin	0/ 0	4/ 4	4/ 4
endrin aldehyde	0/ 0	4/ 4	4/ 4
heptachlor	0/ 0	4/ 4	4/ 4
heptachlor epoxide	0/ 0	4/ 4	4/ 4
hexachlorobenzene	0/ 0	1/ 1	1/ 1
lindane (gamma-BHC)	0/ 0	4/ 4	4/ 4
methamidophos	0/ 0	3/ 4	3/ 4
methoxychlor	0/ 0	13/ 14	13/ 14
methyl bromide	0/ 0	31/ 75	31/ 75
paraquat	0/ 0	7/ 7	7/ 7
simazine	0/ 0	14/ 15	14/ 15
toxaphene	0/ 0	7/ 7	7/ 7
TOTAL SAMPLE RESULTS	0	545	545

COUNTY: Amador

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	8/ 8	8/ 8
1,3-D	0/ 0	8/ 8	8/ 8
2,4-D	0/ 0	8/ 8	8/ 8
carbaryl	0/ 0	1/ 1	1/ 1
methyl bromide	0/ 0	8/ 8	8/ 8
paraquat	0/ 0	1/ 1	1/ 1
TOTAL SAMPLE RESULTS	0	34	34

COUNTY: Butte

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	74/ 139	74/ 139
1,3-D	0/ 0	74/ 132	74/ 132
2,4-D	0/ 0	19/ 22	19/ 22
BHC (all isomers)	0/ 0	7/ 14	7/ 14
DBCP	0/ 0	7/ 7	7/ 7
DDD	0/ 0	6/ 6	6/ 6
DDE	0/ 0	6/ 6	6/ 6
DDT	0/ 0	6/ 6	6/ 6
MCPA, dimethylamine salt	0/ 0	14/ 14	14/ 14
PCP	0/ 0	7/ 8	7/ 8

COUNTY: Butte

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
aldrin	0/ 0	7/ 7	7/ 7
azinophos-methyl	0/ 0	6/ 6	6/ 6
benomyl	0/ 0	9/ 9	9/ 9
bentazon	0/ 0	2/ 2	2/ 2
captan	0/ 0	11/ 11	11/ 11
carbaryl	0/ 0	13/ 13	13/ 13
carbendazim	0/ 0	5/ 5	5/ 5
carbofuran	0/ 0	13/ 13	13/ 13
carbophenothion	0/ 0	1/ 1	1/ 1
chlordane	0/ 0	7/ 7	7/ 7
chloropicrin	0/ 0	1/ 1	1/ 1
chlorpyrifos	0/ 0	10/ 10	10/ 10
creosote	0/ 0	1/ 1	1/ 1
demeton	0/ 0	19/ 19	19/ 19
diazinon	0/ 0	13/ 13	13/ 13
dicamba	0/ 0	14/ 14	14/ 14
dieldrin	0/ 0	6/ 6	6/ 6
disulfoton	0/ 0	6/ 6	6/ 6
diuron	0/ 0	6/ 6	6/ 6
endosulfan	0/ 0	7/ 14	7/ 14
endosulfan sulfate	0/ 0	6/ 6	6/ 6
endrin	0/ 0	26/ 26	26/ 26
endrin aldehyde	0/ 0	6/ 6	6/ 6

COUNTY: Butte

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
ethion	0/ 0	12/ 12	12/ 12
glyphosate	0/ 0	8/ 8	8/ 8
heptachlor	0/ 0	6/ 6	6/ 6
heptachlor epoxide	0/ 0	6/ 6	6/ 6
hexachlorobenzene	0/ 0	6/ 6	6/ 6
lindane (gamma-BHC)	0/ 0	26/ 26	26/ 26
malathion	0/ 0	12/ 12	12/ 12
methomyl	0/ 0	13/ 13	13/ 13
methoxychlor	0/ 0	13/ 13	13/ 13
methyl bromide	0/ 0	69/ 127	69/ 127
molinate	0/ 0	17/ 20	17/ 20
molinate sulfoxide	0/ 0	13/ 16	13/ 16
paraquat	0/ 0	11/ 11	11/ 11
parathion	0/ 0	6/ 12	6/ 12
permethrin (cis and trans)	0/ 0	5/ 10	5/ 10
phosalone	0/ 0	12/ 12	12/ 12
silvex	0/ 0	18/ 18	18/ 18
simazine	0/ 0	5/ 5	5/ 5
thiobencarb	0/ 0	13/ 17	13/ 17
thiobencarb sulfoxide	0/ 0	11/ 12	11/ 12
toxaphene	0/ 0	26/ 26	26/ 26
ziram	0/ 0	10/ 10	10/ 10
TOTAL SAMPLE RESULTS	0	954	954

COUNTY: Calavaras

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	3/ 3	3/ 3
1,3-D	0/ 0	3/ 3	3/ 3
2,4-D	0/ 0	3/ 3	3/ 3
methyl bromide	0/ 0	3/ 3	3/ 3
silvex	0/ 0	3/ 3	3/ 3
TOTAL SAMPLE RESULTS	0	15	15

COUNTY: Colusa

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	6/ 6	6/ 6
1,3-D	0/ 0	6/ 6	6/ 6
2,4-D	0/ 0	3/ 3	3/ 3
DBCP	0/ 0	3/ 4	3/ 4
DNOC	0/ 0	3/ 3	3/ 3

COUNTY: Colusa

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
aldicarb	0/ 0	3/ 3	3/ 3
azinophos-methyl	0/ 0	2/ 2	2/ 2
benomyl	0/ 0	3/ 3	3/ 3
captan	0/ 0	3/ 3	3/ 3
carbaryl	0/ 0	3/ 3	3/ 3
carbendazim	0/ 0	3/ 3	3/ 3
carbofuran	0/ 0	2/ 2	2/ 2
chlorothalonil	0/ 0	3/ 3	3/ 3
demeton	0/ 0	3/ 3	3/ 3
dicofol	0/ 0	3/ 3	3/ 3
dimethoate	0/ 0	1/ 1	1/ 1
dinoseb	0/ 0	3/ 3	3/ 3
disulfoton	0/ 0	3/ 3	3/ 3
endosulfan	0/ 0	3/ 6	3/ 6
endothall	0/ 0	2/ 2	2/ 2
endrin	0/ 0	3/ 3	3/ 3
lindane (gamma-BHC)	0/ 0	3/ 3	3/ 3
methamidophos	0/ 0	2/ 2	2/ 2
methomyl	0/ 0	3/ 3	3/ 3
methoxychlor	0/ 0	2/ 2	2/ 2
methyl bromide	0/ 0	6/ 6	6/ 6
molinate	0/ 0	42/ 50	42/ 50

COUNTY: Colusa

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
molinate sulfoxide	0/ 0	41/ 50	41/ 50
paraquat	0/ 0	3/ 3	3/ 3
phorate	0/ 0	3/ 3	3/ 3
silvex	0/ 0	3/ 3	3/ 3
thiobencarb	0/ 0	43/ 54	43/ 54
thiobencarb sulfoxide	0/ 0	31/ 38	31/ 38
toxaphene	0/ 0	3/ 3	3/ 3
TOTAL SAMPLE RESULTS	0	288	288

COUNTY: Contra Costa

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	51/ 55	51/ 55
1,3-D	0/ 0	51/ 54	51/ 54
BHC (all isomers)	0/ 0	5/ 10	5/ 10
DBCP	0/ 0	4/ 4	4/ 4
DCPA	0/ 0	2/ 2	2/ 2
DDD	0/ 0	6/ 6	6/ 6
DDE	0/ 0	6/ 6	6/ 6
DDT	0/ 0	6/ 6	6/ 6

COUNTY: Contra Costa

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
EDB	0/ 0	7/ 7	7/ 7
PCP	0/ 0	5/ 5	5/ 5
acephate	0/ 0	2/ 2	2/ 2
aldicarb	0/ 0	2/ 2	2/ 2
aldrin	0/ 0	5/ 5	5/ 5
atrazine	1/ 1	5/ 5	6/ 6
azinophos-methyl	0/ 0	4/ 4	4/ 4
benomyl	0/ 0	3/ 3	3/ 3
bromacil	0/ 0	1/ 1	1/ 1
captan	0/ 0	3/ 3	3/ 3
carbaryl	0/ 0	7/ 7	7/ 7
carbendazim	0/ 0	2/ 2	2/ 2
carbofuran	0/ 0	8/ 8	8/ 8
chlordane	0/ 0	6/ 6	6/ 6
chloropicrin	0/ 0	2/ 2	2/ 2
chlorpyrifos	0/ 0	3/ 3	3/ 3
demeton	0/ 0	1/ 1	1/ 1
diazinon	0/ 0	1/ 1	1/ 1
dicofol	0/ 0	7/ 7	7/ 7
dieldrin	0/ 0	5/ 5	5/ 5
dimethoate	0/ 0	2/ 2	2/ 2
disulfoton	0/ 0	6/ 6	6/ 6

COUNTY: Contra Costa

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endosulfan	0/ 0	18/ 31	18/ 31
endosulfan sulfate	0/ 0	7/ 7	7/ 7
endrin	0/ 0	5/ 5	5/ 5
endrin aldehyde	0/ 0	7/ 7	7/ 7
ethion	0/ 0	1/ 1	1/ 1
heptachlor	0/ 0	5/ 5	5/ 5
heptachlor epoxide	0/ 0	5/ 5	5/ 5
hexachlorobenzene	0/ 0	5/ 5	5/ 5
lindane (gamma-BHC)	0/ 0	6/ 6	6/ 6
malathion	0/ 0	1/ 1	1/ 1
maneb	0/ 0	2/ 2	2/ 2
methamidophos	0/ 0	5/ 5	5/ 5
methomyl	0/ 0	7/ 7	7/ 7
methoxychlor	0/ 0	4/ 4	4/ 4
methyl bromide	0/ 0	51/ 55	51/ 55
methyl parathion	0/ 0	1/ 1	1/ 1
mevinphos	0/ 0	1/ 1	1/ 1
oxamyl	0/ 0	6/ 6	6/ 6
paraquat	0/ 0	6/ 6	6/ 6
parathion	0/ 0	1/ 1	1/ 1
phorate	0/ 0	6/ 6	6/ 6
simazine	0/ 0	3/ 3	3/ 3

COUNTY: Contra Costa

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
toxaphene	0/ 0	13/ 14	13/ 14
trifluralin	0/ 0	1/ 1	1/ 1
ziram	0/ 0	2/ 2	2/ 2
TOTAL SAMPLE RESULTS	1	417	418

COUNTY: Del Norte

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	39/ 271	8/ 160	47/ 431
1,3-D	0/ 0	1/ 1	1/ 1
2,4-D	0/ 0	1/ 1	1/ 1
PCP	0/ 0	1/ 1	1/ 1
aldicarb	30/ 225	17/ 131	47/ 356
aldicarb sulfone	1/ 1	2/ 2	3/ 3
ametryn	0/ 0	1/ 1	1/ 1
atraton	0/ 0	1/ 1	1/ 1
atrazine	0/ 0	1/ 1	1/ 1
demeton	0/ 0	1/ 1	1/ 1
dicamba	0/ 0	1/ 1	1/ 1
endrin	0/ 0	1/ 1	1/ 1
fenamiphos	0/ 0	14/ 16	14/ 16

COUNTY: Del Norte

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
fenamiphos sulfone	0/ 0	3/ 3	3/ 3
fenamiphos sulfoxide	0/ 0	3/ 3	3/ 3
lindane (gamma-BHC)	0/ 0	1/ 1	1/ 1
paraquat	0/ 0	1/ 1	1/ 1
prometryn	0/ 0	1/ 1	1/ 1
propazine	0/ 0	1/ 1	1/ 1
silvex	0/ 0	1/ 1	1/ 1
simazine	0/ 0	1/ 1	1/ 1
simetryn	0/ 0	1/ 1	1/ 1
terbutryn	0/ 0	1/ 1	1/ 1
toxaphene	0/ 0	1/ 1	1/ 1
TOTAL SAMPLE RESULTS	497	333	830

COUNTY: El Dorado

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	12/ 12	12/ 12
1,3-D	0/ 0	12/ 12	12/ 12
2,4-D	0/ 0	1/ 1	1/ 1
BHC (all isomers)	0/ 0	1/ 2	1/ 2

COUNTY: El Dorado

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DDD	0/ 0	1/ 1	1/ 1
DDE	0/ 0	1/ 1	1/ 1
DDT	0/ 0	1/ 1	1/ 1
PCP	0/ 0	1/ 1	1/ 1
aldrin	0/ 0	1/ 1	1/ 1
chlordane	0/ 0	1/ 1	1/ 1
demeton	0/ 0	1/ 1	1/ 1
dieldrin	0/ 0	1/ 1	1/ 1
endosulfan	0/ 0	1/ 2	1/ 2
endosulfan sulfate	0/ 0	1/ 1	1/ 1
endrin	0/ 0	2/ 2	2/ 2
endrin aldehyde	0/ 0	1/ 1	1/ 1
heptachlor	0/ 0	1/ 1	1/ 1
heptachlor epoxide	0/ 0	1/ 1	1/ 1
hexachlorobenzene	0/ 0	1/ 1	1/ 1
lindane (gamma-BHC)	0/ 0	2/ 2	2/ 2
methyl bromide	0/ 0	12/ 12	12/ 12
toxaphene	0/ 0	2/ 2	2/ 2
TOTAL SAMPLE RESULTS	0	60	60

COUNTY: Fresno

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	1/ 4	191/ 286	192/ 290
1,3-D	0/ 0	196/ 234	196/ 234
2,4-D	0/ 0	32/ 35	32/ 35
BHC (all isomers)	0/ 0	19/ 37	19/ 37
DBCP	1374/2412	1458/1620	2832/4032
DCPA	0/ 0	1/ 1	1/ 1
DDD	0/ 0	19/ 20	19/ 20
DDE	0/ 0	19/ 20	19/ 20
DDT	0/ 0	21/ 22	21/ 22
DEF	0/ 0	17/ 17	17/ 17
EDB	2/ 2	112/ 113	114/ 115
EPTC	0/ 0	35/ 35	35/ 35
MCPB,sodium salt	0/ 0	1/ 1	1/ 1
PCNB	0/ 0	16/ 16	16/ 16
PCP	0/ 0	21/ 22	21/ 22
acephate	0/ 0	33/ 33	33/ 33
acrolein	0/ 0	2/ 2	2/ 2
alachlor	0/ 0	15/ 15	15/ 15
aldicarb	0/ 0	34/ 34	34/ 34
aldrin	0/ 0	21/ 22	21/ 22
azinophos-methyl	0/ 0	48/ 48	48/ 48
benefin	0/ 0	1/ 1	1/ 1
benomyl	0/ 0	30/ 30	30/ 30

COUNTY: Fresno

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
bromacil	0/ 0	16/ 16	16/ 16
captan	0/ 0	30/ 30	30/ 30
carbaryl	0/ 0	48/ 48	48/ 48
carbendazim	0/ 0	6/ 6	6/ 6
carbofuran	0/ 0	89/ 89	89/ 89
carbophenothion	0/ 0	18/ 18	18/ 18
chlordane	0/ 0	21/ 22	21/ 22
chloroallyl alcohol (cis/tran	0/ 0	6/ 40	6/ 40
chloropicrin	0/ 0	28/ 28	28/ 28
chlorothalonil	0/ 0	15/ 15	15/ 15
chlorpropham	0/ 0	34/ 34	34/ 34
chlorpyrifos	0/ 0	45/ 45	45/ 45
demeton	0/ 0	40/ 44	40/ 44
diazinon	0/ 0	33/ 33	33/ 33
dicofol	0/ 0	48/ 48	48/ 48
dieldrin	0/ 0	21/ 22	21/ 22
dimethoate	0/ 0	44/ 44	44/ 44
dinoseb	0/ 0	46/ 46	46/ 46
diphenamid	0/ 0	1/ 1	1/ 1
disulfoton	0/ 0	36/ 36	36/ 36
diuron	0/ 0	46/ 46	46/ 46
endosulfan	0/ 0	87/ 184	87/ 184

COUNTY: Fresno

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endosulfan sulfate	0/ 0	30/ 31	30/ 31
endothall	0/ 0	33/ 33	33/ 33
endrin	0/ 0	33/ 37	33/ 37
endrin aldehyde	0/ 0	28/ 29	28/ 29
ethion	0/ 0	17/ 17	17/ 17
fenamiphos	0/ 0	27/ 27	27/ 27
fluchloralin	0/ 0	1/ 1	1/ 1
glyphosate	0/ 0	15/ 15	15/ 15
heptachlor	0/ 0	21/ 22	21/ 22
heptachlor epoxide	0/ 0	21/ 22	21/ 22
hexachlorobenzene	0/ 0	19/ 20	19/ 20
lindane (gamma-BHC)	0/ 0	34/ 38	34/ 38
malathion	0/ 0	18/ 18	18/ 18
maneb	0/ 0	27/ 27	27/ 27
methamidophos	0/ 0	34/ 34	34/ 34
methomyl	0/ 0	47/ 47	47/ 47
methoxychlor	0/ 0	49/ 51	49/ 51
methyl bromide	0/ 0	162/ 196	162/ 196
mevinphos	0/ 0	1/ 1	1/ 1
molinate	0/ 0	4/ 7	4/ 7
molinate sulfoxide	0/ 0	4/ 6	4/ 6
oryzalin	0/ 0	1/ 1	1/ 1

COUNTY: Fresno

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
oxamyl	0/ 0	15/ 15	15/ 15
paraquat	0/ 0	46/ 46	46/ 46
parathion	0/ 0	18/ 18	18/ 18
permethrin (cis and trans)	0/ 0	1/ 1	1/ 1
phorate	0/ 0	36/ 36	36/ 36
phosalone	0/ 0	5/ 5	5/ 5
phosmet	0/ 0	5/ 5	5/ 5
prometryn	0/ 0	19/ 19	19/ 19
propargite	0/ 0	6/ 6	6/ 6
propham	0/ 0	33/ 33	33/ 33
propyzamide	0/ 0	1/ 1	1/ 1
silvex	0/ 0	17/ 17	17/ 17
simazine	2/ 2	56/ 56	58/ 58
thanite	0/ 0	1/ 1	1/ 1
thiobencarb	0/ 0	4/ 9	4/ 9
thiobencarb sulfoxide	0/ 0	4/ 5	4/ 5
toxaphene	0/ 0	53/ 70	53/ 70
trifluralin	0/ 0	3/ 3	3/ 3
ziram	0/ 0	29/ 29	29/ 29
TOTAL SAMPLE RESULTS	2420	4614	7034

COUNTY: Glenn

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	13/ 14	13/ 14
1,3-D	0/ 0	13/ 14	13/ 14
2,4-D	0/ 0	7/ 8	7/ 8
BHC (all isomers)	0/ 0	1/ 2	1/ 2
DBCP	0/ 0	2/ 2	2/ 2
DDD	0/ 0	1/ 1	1/ 1
DDE	0/ 0	1/ 1	1/ 1
DDT	0/ 0	1/ 1	1/ 1
DDVP	0/ 0	3/ 3	3/ 3
MCPA, dimethylamine salt	0/ 0	7/ 7	7/ 7
PCP	0/ 0	1/ 1	1/ 1
acephate	0/ 0	3/ 3	3/ 3
alachlor	0/ 0	33/ 33	33/ 33
aldicarb	0/ 0	39/ 39	39/ 39
aldrin	0/ 0	4/ 4	4/ 4
ametryn	0/ 0	6/ 6	6/ 6
atraton	0/ 0	3/ 3	3/ 3
atrazine	36/ 77	111/ 154	147/ 231

COUNTY: Glenn

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
azinophos-methyl	0/ 0	5/ 5	5/ 5
benomyl	0/ 0	7/ 7	7/ 7
captan	0/ 0	4/ 4	4/ 4
carbaryl	0/ 0	7/ 7	7/ 7
carbendazim	0/ 0	5/ 5	5/ 5
carbofuran	0/ 0	40/ 40	40/ 40
chlordane	0/ 0	1/ 1	1/ 1
chlorpyrifos	0/ 0	10/ 10	10/ 10
demeton	0/ 0	7/ 7	7/ 7
diazinon	0/ 0	10/ 10	10/ 10
dicamba	0/ 0	7/ 7	7/ 7
dieldrin	0/ 0	1/ 1	1/ 1
disulfoton	0/ 0	2/ 2	2/ 2
diuron	0/ 0	5/ 5	5/ 5
endosulfan	0/ 0	1/ 2	1/ 2
endosulfan sulfate	0/ 0	1/ 1	1/ 1
endrin	0/ 0	8/ 8	8/ 8
endrin aldehyde	0/ 0	1/ 1	1/ 1
ethion	0/ 0	7/ 7	7/ 7
glyphosate	0/ 0	2/ 2	2/ 2
heptachlor	0/ 0	1/ 1	1/ 1
heptachlor epoxide	0/ 0	1/ 1	1/ 1

COUNTY: Glenn

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
hexachlorobenzene	0/ 0	2/ 2	2/ 2
lindane (gamma-BHC)	0/ 0	8/ 8	8/ 8
malathion	0/ 0	7/ 7	7/ 7
methomyl	0/ 0	7/ 7	7/ 7
methoxychlor	0/ 0	7/ 7	7/ 7
methyl bromide	0/ 0	11/ 12	11/ 12
methyl parathion	0/ 0	3/ 3	3/ 3
metolachlor	0/ 0	33/ 33	33/ 33
molinate	0/ 0	62/ 68	62/ 68
molinate sulfoxide	0/ 0	23/ 27	23/ 27
paraquat	0/ 0	4/ 4	4/ 4
parathion	0/ 0	2/ 4	2/ 4
permethrin (cis and trans)	0/ 0	2/ 4	2/ 4
phosalone	0/ 0	7/ 7	7/ 7
prometon	8/ 16	110/ 121	118/ 137
prometryn	0/ 0	3/ 3	3/ 3
propazine	0/ 0	6/ 6	6/ 6
propyzamide	0/ 0	3/ 3	3/ 3
screen (carbamate)	0/ 0	33/ 33	33/ 33
screen (chlorinated hydrocarb)	0/ 0	33/ 33	33/ 33
screen (organophosphate)	0/ 0	33/ 33	33/ 33
silvex	0/ 0	7/ 7	7/ 7

COUNTY: Glenn

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
simazine	17/ 31	129/ 176	146/ 207
simetryn	0/ 0	6/ 6	6/ 6
terbacil	0/ 0	3/ 3	3/ 3
terbutryn	0/ 0	6/ 6	6/ 6
thiobencarb	0/ 0	59/ 68	59/ 68
thiobencarb sulfoxide	0/ 0	18/ 20	18/ 20
toxaphene	0/ 0	8/ 8	8/ 8
trifluralin	0/ 0	3/ 3	3/ 3
ziram	0/ 0	5/ 5	5/ 5
TOTAL SAMPLE RESULTS	124	1157	1281

COUNTY: Humboldt

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	9/ 9	9/ 9
1,3-D	0/ 0	9/ 9	9/ 9
2,4-D	0/ 0	11/ 11	11/ 11
PCP	0/ 0	4/ 4	4/ 4
aldicarb	0/ 0	2/ 2	2/ 2
ametryn	0/ 0	2/ 2	2/ 2
atraton	0/ 0	2/ 2	2/ 2

COUNTY: Humboldt

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
atrazine	0/ 0	2/ 2	2/ 2
demeton	0/ 0	11/ 11	11/ 11
endrin	0/ 0	11/ 11	11/ 11
formaldehyde	0/ 0	1/ 1	1/ 1
glyphosate	0/ 0	2/ 2	2/ 2
lindane (gamma-BHC)	0/ 0	11/ 11	11/ 11
prometryn	0/ 0	2/ 2	2/ 2
propazine	0/ 0	2/ 2	2/ 2
silvex	0/ 0	10/ 10	10/ 10
simazine	0/ 0	2/ 2	2/ 2
simetryn	0/ 0	2/ 2	2/ 2
terbutryn	0/ 0	2/ 2	2/ 2
toxaphene	0/ 0	12/ 12	12/ 12
TOTAL SAMPLE RESULTS	0	109	109

COUNTY: Imperial

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	2/ 2	2/ 2
1,3-D	0/ 0	2/ 4	2/ 4

COUNTY: Imperial

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
2,4-D	0/ 0	2/ 2	2/ 2
azinophos-methyl	0/ 0	1/ 1	1/ 1
captan	0/ 0	1/ 1	1/ 1
carbaryl	0/ 0	1/ 1	1/ 1
chloropicrin	0/ 0	1/ 1	1/ 1
demeton	0/ 0	2/ 2	2/ 2
dimethoate	0/ 0	2/ 2	2/ 2
dinoseb	0/ 0	1/ 1	1/ 1
disulfoton	0/ 0	1/ 1	1/ 1
diuron	0/ 0	1/ 1	1/ 1
endosulfan	0/ 0	1/ 1	1/ 1
endosulfan sulfate	0/ 0	1/ 1	1/ 1
endrin	0/ 0	2/ 2	2/ 2
lindane (gamma-BHC)	0/ 0	2/ 2	2/ 2
methomyl	0/ 0	2/ 2	2/ 2
methyl bromide	0/ 0	2/ 4	2/ 4
oxamyl	0/ 0	1/ 1	1/ 1
prometryn	0/ 0	1/ 1	1/ 1
silvex	0/ 0	2/ 2	2/ 2
toxaphene	0/ 0	2/ 2	2/ 2
TOTAL SAMPLE RESULTS	0	37	37

COUNTY: Inyo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	8/ 12	8/ 12
1,3-D	0/ 0	8/ 12	8/ 12
2,4-D	0/ 0	7/ 7	7/ 7
demeton	0/ 0	7/ 7	7/ 7
endrin	0/ 0	7/ 7	7/ 7
lindane (gamma-BHC)	0/ 0	7/ 7	7/ 7
methyl bromide	0/ 0	8/ 12	8/ 12
silvex	0/ 0	7/ 7	7/ 7
toxaphene	0/ 0	7/ 7	7/ 7
TOTAL SAMPLE RESULTS	0	78	78

COUNTY: Kern

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	8/ 15	255/ 328	263/ 343
1,3-D	0/ 0	221/ 258	221/ 258
2,4-D	0/ 0	31/ 31	31/ 31
BHC (all isomers)	0/ 0	21/ 46	21/ 46
D-D mix	0/ 0	10/ 16	10/ 16
DBCP	47/ 155	65/ 97	112/ 252

COUNTY: Kern

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DCPA	0/ 0	9/ 9	9/ 9
DDD	0/ 0	22/ 24	22/ 24
DDE	0/ 0	22/ 24	22/ 24
DDT	0/ 0	22/ 24	22/ 24
DEF	0/ 0	21/ 21	21/ 21
EDB	16/ 26	131/ 191	147/ 217
EPTC	0/ 0	28/ 28	28/ 28
PCNB	0/ 0	21/ 21	21/ 21
PCP	0/ 0	20/ 22	20/ 22
acephate	0/ 0	21/ 21	21/ 21
acrolein	0/ 0	1/ 1	1/ 1
aldicarb	0/ 0	29/ 29	29/ 29
aldrin	0/ 0	21/ 23	21/ 23
atrazine	0/ 0	1/ 1	1/ 1
azinophos-methyl	0/ 0	28/ 28	28/ 28
benomyl	0/ 0	4/ 5	4/ 5
captan	0/ 0	27/ 27	27/ 27
carbaryl	0/ 0	13/ 14	13/ 14
carbofuran	0/ 0	60/ 60	60/ 60
chlordane	0/ 0	31/ 35	31/ 35
chloropicrin	0/ 0	27/ 27	27/ 27
chlorothalonil	0/ 0	2/ 2	2/ 2

COUNTY: Kern

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
chlorpropham	0/ 0	9/ 9	9/ 9
chlorpyrifos	0/ 0	25/ 25	25/ 25
demeton	0/ 0	32/ 32	32/ 32
diazinon	0/ 0	23/ 23	23/ 23
dicofol	0/ 0	26/ 26	26/ 26
dieldrin	0/ 0	21/ 23	21/ 23
dimethoate	0/ 0	28/ 28	28/ 28
dinoseb	0/ 0	29/ 31	29/ 31
diphenamid	0/ 0	2/ 2	2/ 2
disulfoton	0/ 0	26/ 26	26/ 26
diuron	0/ 0	27/ 28	27/ 28
endosulfan	0/ 0	22/ 45	22/ 45
endosulfan sulfate	0/ 0	19/ 21	19/ 21
endothall	0/ 0	21/ 21	21/ 21
endrin	0/ 0	23/ 25	23/ 25
endrin aldehyde	0/ 0	19/ 21	19/ 21
fenamiphos	0/ 0	8/ 8	8/ 8
heptachlor	0/ 0	21/ 23	21/ 23
heptachlor epoxide	0/ 0	21/ 23	21/ 23
hexachlorobenzene	0/ 0	20/ 22	20/ 22
lindane (gamma-BHC)	0/ 0	27/ 29	27/ 29
methamidophos	0/ 0	25/ 25	25/ 25

COUNTY: Kern

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
methidathion	0/ 0	2/ 2	2/ 2
methomyl	0/ 0	25/ 25	25/ 25
methoxychlor	0/ 0	29/ 29	29/ 29
methyl bromide	0/ 0	221/ 269	221/ 269
methylene chloride	0/ 0	1/ 1	1/ 1
molinate	0/ 0	2/ 4	2/ 4
molinate sulfoxide	0/ 0	2/ 3	2/ 3
naled	0/ 0	5/ 5	5/ 5
oxamyl	0/ 0	5/ 5	5/ 5
paraquat	0/ 0	29/ 29	29/ 29
phorate	0/ 0	26/ 26	26/ 26
propham	0/ 0	14/ 14	14/ 14
silvex	0/ 0	10/ 10	10/ 10
simazine	0/ 0	36/ 36	36/ 36
thiobencarb	0/ 0	2/ 5	2/ 5
thiobencarb sulfoxide	0/ 0	2/ 3	2/ 3
toxaphene	0/ 0	40/ 46	40/ 46
trifluralin	0/ 0	2/ 2	2/ 2
TOTAL SAMPLE RESULTS	196	2443	2639

COUNTY: Kings

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	15/ 26	15/ 26
1,3-D	0/ 0	14/ 20	14/ 20
2,4-D	0/ 0	5/ 5	5/ 5
BHC (all isomers)	0/ 0	7/ 12	7/ 12
DBCP	6/ 6	41/ 41	47/ 47
DCPA	0/ 0	2/ 2	2/ 2
DDD	0/ 0	7/ 7	7/ 7
DDE	0/ 0	7/ 7	7/ 7
DDT	0/ 0	7/ 7	7/ 7
DEF	0/ 0	3/ 3	3/ 3
DNOC	0/ 0	2/ 2	2/ 2
EDB	0/ 0	16/ 16	16/ 16
EPTC	0/ 0	6/ 6	6/ 6
MCPB,sodium salt	0/ 0	2/ 2	2/ 2
PCNB	0/ 0	7/ 7	7/ 7
PCP	0/ 0	7/ 7	7/ 7
acephate	0/ 0	2/ 2	2/ 2
alachlor	0/ 0	5/ 5	5/ 5
aldicarb	0/ 0	10/ 11	10/ 11
aldrin	0/ 0	7/ 7	7/ 7
azinophos-ethyl	0/ 0	1/ 1	1/ 1

COUNTY: Kings

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
azinophos-methyl	0/ 0	10/ 10	10/ 10
benefin	0/ 0	2/ 2	2/ 2
benomyl	0/ 0	5/ 5	5/ 5
bromacil	0/ 0	2/ 2	2/ 2
captan	0/ 0	10/ 10	10/ 10
carbaryl	0/ 0	10/ 10	10/ 10
carbendazim	0/ 0	1/ 1	1/ 1
carbofuran	0/ 0	16/ 16	16/ 16
chlordane	0/ 0	7/ 7	7/ 7
chlordimeform	0/ 0	2/ 2	2/ 2
chloropicrin	0/ 0	7/ 7	7/ 7
chlorothalonil	0/ 0	3/ 3	3/ 3
chlorpyrifos	0/ 0	8/ 8	8/ 8
demeton	0/ 0	7/ 7	7/ 7
diazinon	0/ 0	2/ 2	2/ 2
dicofol	0/ 0	10/ 10	10/ 10
dieldrin	0/ 0	7/ 7	7/ 7
dimethoate	0/ 0	6/ 6	6/ 6
dinoseb	0/ 0	10/ 10	10/ 10
diphenamid	0/ 0	2/ 2	2/ 2
disulfoton	0/ 0	10/ 10	10/ 10
endosulfan	0/ 0	12/ 26	12/ 26

COUNTY: Kings

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endosulfan sulfate	0/ 0	7/ 7	7/ 7
endothall	0/ 0	4/ 4	4/ 4
endrin	0/ 0	6/ 8	6/ 8
endrin aldehyde	0/ 0	7/ 7	7/ 7
ethion	0/ 0	2/ 2	2/ 2
fenamiphos	0/ 0	2/ 2	2/ 2
fluchloralin	0/ 0	2/ 2	2/ 2
heptachlor	0/ 0	7/ 7	7/ 7
heptachlor epoxide	0/ 0	7/ 7	7/ 7
hexachlorobenzene	0/ 0	7/ 7	7/ 7
lindane (gamma-BHC)	0/ 0	13/ 16	13/ 16
malathion	0/ 0	6/ 6	6/ 6
maneb	0/ 0	1/ 1	1/ 1
methamidophos	0/ 0	10/ 10	10/ 10
methomyl	0/ 0	10/ 10	10/ 10
methoxychlor	0/ 0	10/ 10	10/ 10
methyl bromide	0/ 0	15/ 24	15/ 24
methyl parathion	0/ 0	2/ 2	2/ 2
mevinphos	0/ 0	2/ 2	2/ 2
molinate	0/ 0	1/ 1	1/ 1
molinate sulfoxide	0/ 0	1/ 1	1/ 1
napropamide	0/ 0	3/ 3	3/ 3

COUNTY: Kings

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
oryzalin	0/ 0	2/ 2	2/ 2
paraquat	0/ 0	9/ 9	9/ 9
permethrin (cis and trans)	0/ 0	2/ 2	2/ 2
phorate	0/ 0	6/ 6	6/ 6
phosalone	0/ 0	1/ 1	1/ 1
phosmet	0/ 0	1/ 1	1/ 1
propargite	0/ 0	2/ 2	2/ 2
propham	0/ 0	5/ 5	5/ 5
propyzamide	0/ 0	2/ 2	2/ 2
silvex	0/ 0	3/ 3	3/ 3
simazine	0/ 0	14/ 14	14/ 14
thiobencarb	0/ 0	1/ 1	1/ 1
thiobencarb sulfoxide	0/ 0	1/ 1	1/ 1
toxaphene	0/ 0	14/ 17	14/ 17
trichlorophon	0/ 0	2/ 2	2/ 2
ziram	0/ 0	5/ 5	5/ 5
TOTAL SAMPLE RESULTS	6	571	577

COUNTY: Lake

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	4/ 6	4/ 6
1,3-D	0/ 0	4/ 6	4/ 6
acephate	0/ 0	1/ 1	1/ 1
amitraz	0/ 0	1/ 1	1/ 1
atrazine	0/ 0	2/ 2	2/ 2
azinophos-methyl	0/ 0	1/ 1	1/ 1
benomyl	0/ 0	1/ 1	1/ 1
carbaryl	0/ 0	2/ 2	2/ 2
carbendazim	0/ 0	1/ 1	1/ 1
carbofuran	0/ 0	1/ 1	1/ 1
dimethoate	0/ 0	3/ 3	3/ 3
dinoseb	0/ 0	1/ 1	1/ 1
diuron	0/ 0	1/ 1	1/ 1
endosulfan	0/ 0	3/ 5	3/ 5
ethion	0/ 0	1/ 1	1/ 1
fenbutatin-oxide	0/ 0	1/ 1	1/ 1

COUNTY: Lake

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
fenvalerate	0/ 0	1/ 1	1/ 1
methoxychlor	0/ 0	2/ 2	2/ 2
methyl bromide	0/ 0	4/ 6	4/ 6
permethrin (cis and trans)	0/ 0	1/ 1	1/ 1
screen (organophosphate)	0/ 0	3/ 3	3/ 3
simazine	0/ 0	6/ 6	6/ 6
TOTAL SAMPLE RESULTS	0	53	53

COUNTY: Lassen

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	9/ 9	9/ 9
1,3-D	0/ 0	5/ 5	5/ 5
2,4-D	0/ 0	5/ 5	5/ 5
BHC (all isomers)	0/ 0	4/ 8	4/ 8
DDD	0/ 0	4/ 4	4/ 4
DDE	0/ 0	4/ 4	4/ 4
DDT	0/ 0	4/ 4	4/ 4
PCP	0/ 0	6/ 6	6/ 6
aldicarb	0/ 0	3/ 3	3/ 3
aldrin	0/ 0	4/ 4	4/ 4

COUNTY: Lassen

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
ametryn	0/ 0	3/ 3	3/ 3
atraton	0/ 0	3/ 3	3/ 3
atrazine	0/ 0	4/ 4	4/ 4
azinophos-methyl	0/ 0	2/ 2	2/ 2
carbofuran	0/ 0	2/ 2	2/ 2
chlordane	0/ 0	4/ 4	4/ 4
demeton	0/ 0	3/ 3	3/ 3
diazinon	0/ 0	1/ 1	1/ 1
dieldrin	0/ 0	4/ 4	4/ 4
disulfoton	0/ 0	1/ 1	1/ 1
endosulfan	0/ 0	4/ 8	4/ 8
endosulfan sulfate	0/ 0	4/ 4	4/ 4
endrin	0/ 0	5/ 7	5/ 7
endrin aldehyde	0/ 0	4/ 4	4/ 4
ethion	0/ 0	1/ 1	1/ 1
heptachlor	0/ 0	4/ 4	4/ 4
heptachlor epoxide	0/ 0	4/ 4	4/ 4
hexachlorobenzene	0/ 0	4/ 4	4/ 4
lindane (gamma-BHC)	0/ 0	5/ 7	5/ 7
malathion	0/ 0	1/ 1	1/ 1
methoxychlor	0/ 0	1/ 1	1/ 1
methyl bromide	0/ 0	5/ 5	5/ 5

COUNTY: Lassen

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
methyl parathion	0/ 0	1/ 1	1/ 1
paraquat	0/ 0	3/ 3	3/ 3
parathion	0/ 0	1/ 2	1/ 2
prometryn	0/ 0	3/ 3	3/ 3
propazine	0/ 0	3/ 3	3/ 3
silvex	0/ 0	3/ 3	3/ 3
simazine	0/ 0	4/ 4	4/ 4
simetryn	0/ 0	3/ 3	3/ 3
terbutryn	0/ 0	3/ 3	3/ 3
toxaphene	0/ 0	5/ 7	5/ 7
TOTAL SAMPLE RESULTS	0	161	161

COUNTY: Los Angeles

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	525/1045	525/1045
1,3-D	0/ 0	526/ 788	526/ 788
2,4-D	0/ 0	57/ 58	57/ 58
BHC (all isomers)	0/ 0	343/ 757	343/ 757
DBCP	1/ 2	76/ 76	77/ 78
DCPA	0/ 0	152/ 153	152/ 153

COUNTY: Los Angeles

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DDD	0/ 0	344/ 361	344/ 361
DDE	0/ 0	343/ 361	343/ 361
DDT	0/ 0	344/ 363	344/ 363
DEF	0/ 0	137/ 137	137/ 137
DNOC	0/ 0	141/ 141	141/ 141
EDB	0/ 0	19/ 19	19/ 19
EPTC	0/ 0	88/ 89	88/ 89
PCNB	0/ 0	1/ 1	1/ 1
PCP	0/ 0	329/ 429	329/ 429
acephate	0/ 0	94/ 94	94/ 94
alachlor	0/ 0	130/ 131	130/ 131
aldicarb	0/ 0	62/ 62	62/ 62
aldrin	0/ 0	345/ 365	345/ 365
atrazine	36/ 64	342/ 365	378/ 429
azinophos-methyl	0/ 0	113/ 114	113/ 114
benefin	0/ 0	140/ 140	140/ 140
benomyl	0/ 0	83/ 83	83/ 83

COUNTY: Los Angeles

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
bromacil	0/ 0	246/ 246	246/ 246
captan	0/ 0	189/ 190	189/ 190
carbaryl	0/ 0	186/ 187	186/ 187
carbofuran	0/ 0	57/ 57	57/ 57
chlordane	0/ 0	344/ 363	344/ 363
chlordimeform	0/ 0	138/ 138	138/ 138
chloropicrin	0/ 0	360/ 361	360/ 361
chlorothalonil	0/ 0	189/ 190	189/ 190
chlorpropham	0/ 0	104/ 105	104/ 105
chlorpyrifos	0/ 0	100/ 101	100/ 101
cyanazine	0/ 0	174/ 215	174/ 215
demeton	0/ 0	141/ 142	141/ 142
diazinon	0/ 0	51/ 52	51/ 52
dicofol	0/ 0	199/ 201	199/ 201
dieldrin	0/ 0	344/ 364	344/ 364
dimethoate	0/ 0	106/ 107	106/ 107
dinoseb	0/ 0	141/ 141	141/ 141
diphenamid	0/ 0	257/ 257	257/ 257
disulfoton	0/ 0	52/ 53	52/ 53
diuron	0/ 0	199/ 200	199/ 200
endosulfan	0/ 0	347/1003	347/1003
endosulfan sulfate	0/ 0	344/ 361	344/ 361

COUNTY: Los Angeles

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endothall	0/ 0	141/ 141	141/ 141
endrin	0/ 0	345/ 499	345/ 499
endrin aldehyde	0/ 0	339/ 355	339/ 355
ethion	0/ 0	49/ 50	49/ 50
fenamiphos	0/ 0	49/ 50	49/ 50
fluchloralin	0/ 0	139/ 139	139/ 139
glyphosate	0/ 0	1/ 1	1/ 1
heptachlor	0/ 0	343/ 366	343/ 366
heptachlor epoxide	0/ 0	344/ 362	344/ 362
hexachlorobenzene	0/ 0	324/ 329	324/ 329
lindane (gamma-BHC)	0/ 0	348/ 537	348/ 537
malathion	0/ 0	17/ 17	17/ 17
maneb	0/ 0	1/ 1	1/ 1
merphos	0/ 0	136/ 136	136/ 136
methamidophos	0/ 0	55/ 56	55/ 56
methidathion	0/ 0	20/ 20	20/ 20
methomyl	0/ 0	187/ 188	187/ 188
methoxychlor	0/ 0	117/ 117	117/ 117
methyl bromide	0/ 0	528/1097	528/1097
methyl parathion	0/ 0	49/ 50	49/ 50
mevinphos	0/ 0	51/ 52	51/ 52
napropamide	0/ 0	139/ 147	139/ 147

COUNTY: Los Angeles

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
oryzalin	0/ 0	140/ 148	140/ 148
oxamyl	0/ 0	132/ 133	132/ 133
paraquat	0/ 0	71/ 71	71/ 71
parathion	0/ 0	2/ 4	2/ 4
permethrin (cis and trans)	0/ 0	140/ 279	140/ 279
phorate	0/ 0	52/ 53	52/ 53
prometon	0/ 0	2/ 2	2/ 2
prometryn	0/ 0	174/ 215	174/ 215
propargite	0/ 0	140/ 140	140/ 140
propham	0/ 0	99/ 100	99/ 100
propyzamide	0/ 0	140/ 140	140/ 140
silvex	0/ 0	16/ 17	16/ 17
simazine	20/ 35	365/ 400	385/ 435
toxaphene	0/ 0	350/ 537	350/ 537
trichlorophon	0/ 0	49/ 50	49/ 50
ziram	0/ 0	1/ 1	1/ 1
TOTAL SAMPLE RESULTS	101	18166	18267

COUNTY: Madera

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	17/ 20	17/ 20
1,3-D	0/ 0	17/ 17	17/ 17
2,4-D	0/ 0	2/ 2	2/ 2
BHC (all isomers)	0/ 0	3/ 6	3/ 6
DBCP	5/ 12	32/ 41	37/ 53
DDD	0/ 0	4/ 4	4/ 4
DDE	0/ 0	4/ 4	4/ 4
DDT	0/ 0	6/ 6	6/ 6
DEF	0/ 0	6/ 6	6/ 6
EDB	0/ 0	12/ 12	12/ 12
EPTC	0/ 0	4/ 4	4/ 4
MCPB,sodium salt	0/ 0	2/ 2	2/ 2
PCNB	0/ 0	4/ 4	4/ 4
PCP	0/ 0	3/ 3	3/ 3
acephate	0/ 0	5/ 5	5/ 5
alachlor	0/ 0	1/ 1	1/ 1
aldicarb	0/ 0	4/ 4	4/ 4
aldrin	0/ 0	3/ 3	3/ 3
azinophos-methyl	0/ 0	8/ 8	8/ 8
benomyl	0/ 0	5/ 5	5/ 5
bromacil	0/ 0	1/ 1	1/ 1
captan	0/ 0	5/ 5	5/ 5

COUNTY: Madera

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES					
	POSITIVE		NEGATIVE		TOTAL	
carbaryl	0/	0	9/	9	9/	9
carbendazim	0/	0	5/	5	5/	5
carbofuran	0/	0	17/	17	17/	17
carbophenothion	0/	0	1/	1	1/	1
chlordane	0/	0	4/	4	4/	4
chloropicrin	0/	0	7/	7	7/	7
chlorpyrifos	0/	0	4/	4	4/	4
demeton	0/	0	5/	5	5/	5
diazinon	0/	0	3/	3	3/	3
dicofol	0/	0	8/	8	8/	8
dieldrin	0/	0	5/	5	5/	5
dimethoate	0/	0	8/	8	8/	8
dinoseb	0/	0	9/	9	9/	9
disulfoton	0/	0	5/	5	5/	5
diuron	0/	0	6/	6	6/	6
endosulfan	0/	0	10/	24	10/	24
endosulfan sulfate	0/	0	3/	3	3/	3
endothall	0/	0	4/	4	4/	4
endrin	0/	0	3/	3	3/	3
endrin aldehyde	0/	0	3/	3	3/	3
ethion	0/	0	2/	2	2/	2
fenamiphos	0/	0	5/	5	5/	5

COUNTY: Madera

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES					
	POSITIVE		NEGATIVE		TOTAL	
heptachlor	0/	0	4/	4	4/	4
heptachlor epoxide	0/	0	4/	4	4/	4
hexachlorobenzene	0/	0	3/	3	3/	3
lindane (gamma-BHC)	0/	0	4/	4	4/	4
malathion	0/	0	3/	3	3/	3
methamidophos	0/	0	6/	6	6/	6
methomyl	0/	0	9/	9	9/	9
methoxychlor	0/	0	8/	8	8/	8
methyl bromide	0/	0	17/	24	17/	24
methyl parathion	0/	0	2/	2	2/	2
mevinphos	0/	0	2/	2	2/	2
molinate	0/	0	1/	1	1/	1
molinate sulfoxide	0/	0	1/	1	1/	1
naled	0/	0	3/	3	3/	3
oxamyl	0/	0	1/	1	1/	1
paraquat	0/	0	10/	11	10/	11
parathion	0/	0	3/	3	3/	3
phorate	0/	0	6/	6	6/	6
prometryn	0/	0	4/	4	4/	4
propargite	0/	0	2/	2	2/	2
simazine	0/	0	12/	12	12/	12
tetradifon	0/	0	1/	1	1/	1

COUNTY: Madera

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
thiobencarb	0/ 0	1/ 1	1/ 1
thiobencarb sulfoxide	0/ 0	1/ 1	1/ 1
toxaphene	0/ 0	4/ 4	4/ 4
trifluralin	0/ 0	2/ 2	2/ 2
TOTAL SAMPLE RESULTS	12	425	437

COUNTY: Marin

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	12/ 12	12/ 12
1,3-D	0/ 0	12/ 12	12/ 12
formaldehyde	0/ 0	3/ 3	3/ 3
methyl bromide	0/ 0	12/ 12	12/ 12
TOTAL SAMPLE RESULTS	0	39	39

COUNTY: Mendocino

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	8/ 8	8/ 8
1,3-D	0/ 0	8/ 8	8/ 8
BHC (all isomers)	0/ 0	2/ 4	2/ 4
DDD	0/ 0	2/ 2	2/ 2
DDE	0/ 0	2/ 2	2/ 2
DDT	0/ 0	2/ 2	2/ 2
PCP	0/ 0	2/ 2	2/ 2
aldrin	0/ 0	2/ 2	2/ 2
azinophos-methyl	0/ 0	2/ 2	2/ 2
captan	0/ 0	5/ 5	5/ 5
carbaryl	0/ 0	5/ 5	5/ 5
carbophenothion	0/ 0	1/ 1	1/ 1
chlordane	0/ 0	2/ 2	2/ 2
dicofol	0/ 0	6/ 6	6/ 6
dieldrin	0/ 0	2/ 2	2/ 2
dimethoate	0/ 0	5/ 5	5/ 5
dinoseb	0/ 0	5/ 5	5/ 5
endosulfan	0/ 0	8/ 16	8/ 16
endosulfan sulfate	0/ 0	2/ 2	2/ 2

COUNTY: Mendocino

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endrin	0/ 0	2/ 2	2/ 2
endrin aldehyde	0/ 0	2/ 2	2/ 2
ethion	0/ 0	2/ 2	2/ 2
heptachlor	0/ 0	2/ 2	2/ 2
heptachlor epoxide	0/ 0	2/ 2	2/ 2
hexachlorobenzene	0/ 0	2/ 2	2/ 2
lindane (gamma-BHC)	0/ 0	2/ 2	2/ 2
methoxychlor	0/ 0	5/ 5	5/ 5
methyl bromide	0/ 0	8/ 13	8/ 13
paraquat	0/ 0	5/ 5	5/ 5
screen (chlorinated hydrocarb)	0/ 0	1/ 1	1/ 1
screen (organophosphate)	0/ 0	2/ 2	2/ 2
simazine	0/ 0	6/ 6	6/ 6
toxaphene	0/ 0	3/ 3	3/ 3
TOTAL SAMPLE RESULTS	0	130	130

COUNTY: Merced

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	3/ 3	104/ 112	107/ 115
1,3-D	0/ 0	86/ 89	86/ 89
2,4-D	0/ 0	6/ 6	6/ 6
BHC (all isomers)	0/ 0	11/ 22	11/ 22
DBCP	275/ 461	433/ 491	708/ 952
DDD	0/ 0	12/ 12	12/ 12
DDE	0/ 0	12/ 12	12/ 12
DDT	0/ 0	12/ 12	12/ 12
DEF	0/ 0	5/ 5	5/ 5
EDB	4/ 4	55/ 55	59/ 59
EPTC	0/ 0	9/ 9	9/ 9
MCPB,sodium salt	0/ 0	5/ 5	5/ 5
PCNB	0/ 0	4/ 4	4/ 4
PCP	0/ 0	13/ 13	13/ 13
acephate	0/ 0	5/ 5	5/ 5
alachlor	0/ 0	5/ 5	5/ 5
aldicarb	0/ 0	4/ 4	4/ 4
aldrin	0/ 0	11/ 11	11/ 11
atrazine	0/ 0	2/ 2	2/ 2
azinophos-methyl	0/ 0	17/ 18	17/ 18
benefin	0/ 0	1/ 1	1/ 1
benomyl	0/ 0	12/ 13	12/ 13
captan	0/ 0	11/ 12	11/ 12

COUNTY: Merced

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
carbaryl	0/ 0	20/ 21	20/ 21
carbendazim	0/ 0	6/ 6	6/ 6
carbofuran	0/ 0	31/ 31	31/ 31
carbophenothion	0/ 0	2/ 2	2/ 2
chlordane	0/ 0	12/ 12	12/ 12
chloroallyl alcohol (cis/tran	0/ 0	3/ 3	3/ 3
chloropicrin	0/ 0	12/ 13	12/ 13
chlorothalonil	0/ 0	2/ 2	2/ 2
chlorpropham	0/ 0	5/ 5	5/ 5
chlorpyrifos	0/ 0	16/ 17	16/ 17
demeton	0/ 0	9/ 10	9/ 10
diazinon	0/ 0	10/ 11	10/ 11
dicamba	0/ 0	2/ 3	2/ 3
dicofol	0/ 0	13/ 13	13/ 13
dieldrin	0/ 0	11/ 11	11/ 11
dimethoate	0/ 0	17/ 18	17/ 18
dinoseb	0/ 0	20/ 21	20/ 21
disulfoton	0/ 0	12/ 12	12/ 12
diuron	0/ 0	10/ 10	10/ 10
endosulfan	0/ 0	37/ 76	37/ 76
endosulfan sulfate	0/ 0	23/ 24	23/ 24
endothall	0/ 0	4/ 4	4/ 4

COUNTY: Merced

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endrin	0/ 0	11/ 11	11/ 11
endrin aldehyde	0/ 0	11/ 11	11/ 11
ethion	0/ 0	4/ 4	4/ 4
fenamiphos	0/ 0	2/ 2	2/ 2
heptachlor	0/ 0	12/ 12	12/ 12
heptachlor epoxide	0/ 0	12/ 12	12/ 12
hexachlorobenzene	0/ 0	11/ 11	11/ 11
lindane (gamma-BHC)	0/ 0	14/ 14	14/ 14
malathion	0/ 0	11/ 12	11/ 12
maneb	0/ 0	12/ 13	12/ 13
methamidophos	0/ 0	5/ 5	5/ 5
methomyl	0/ 0	14/ 14	14/ 14
methoxychlor	0/ 0	18/ 19	18/ 19
methyl bromide	0/ 0	50/ 61	50/ 61
methyl parathion	0/ 0	1/ 1	1/ 1
mevinphos	0/ 0	4/ 4	4/ 4
molinate	0/ 0	24/ 32	24/ 32
molinate sulfoxide	0/ 0	24/ 28	24/ 28
naled	0/ 0	7/ 7	7/ 7
napropamide	0/ 0	6/ 6	6/ 6
oxydemeton-methyl	0/ 0	2/ 2	2/ 2
paraquat	0/ 0	20/ 21	20/ 21

COUNTY: Merced

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
parathion	0/ 0	4/ 4	4/ 4
phorate	0/ 0	13/ 13	13/ 13
phosalone	0/ 0	4/ 5	4/ 5
phosmet	0/ 0	4/ 5	4/ 5
prometryn	0/ 0	4/ 4	4/ 4
propargite	0/ 0	7/ 8	7/ 8
propham	0/ 0	4/ 4	4/ 4
simazine	0/ 0	31/ 32	31/ 32
tetradifon	0/ 0	1/ 1	1/ 1
thiobencarb	0/ 0	24/ 36	24/ 36
thiobencarb sulfoxide	0/ 0	22/ 25	22/ 25
toxaphene	0/ 0	28/ 29	28/ 29
trichlorophon	0/ 0	2/ 2	2/ 2
trifluralin	0/ 0	4/ 4	4/ 4
ziram	0/ 0	10/ 11	10/ 11
TOTAL SAMPLE RESULTS	468	1728	2196

COUNTY: Modoc

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	3/ 3	3/ 3
1,3-	0/ 0	3/ 3	3/ 3
2,4-D	0/ 0	1/ 1	1/ 1
PCP	0/ 0	1/ 1	1/ 1
aldicarb	0/ 0	2/ 2	2/ 2
ametryn	0/ 0	2/ 2	2/ 2
aminocarb	0/ 0	1/ 1	1/ 1
atraton	0/ 0	2/ 2	2/ 2
atrazine	0/ 0	2/ 2	2/ 2
carbaryl	0/ 0	1/ 1	1/ 1
carbofuran	0/ 0	1/ 1	1/ 1
demeton	0/ 0	1/ 1	1/ 1
endrin	0/ 0	1/ 1	1/ 1
hexazinone	0/ 0	1/ 1	1/ 1
lindane (gamma-BHC)	0/ 0	1/ 1	1/ 1
methiocarb	0/ 0	1/ 1	1/ 1
methyl bromide	0/ 0	3/ 3	3/ 3
paraquat	0/ 0	2/ 2	2/ 2
prometryn	0/ 0	2/ 2	2/ 2
propazine	0/ 0	2/ 2	2/ 2
propoxur	0/ 0	1/ 1	1/ 1
silvex	0/ 0	1/ 1	1/ 1
simazine	0/ 0	2/ 2	2/ 2
simetryn	0/ 0	2/ 2	2/ 2

COUNTY: Modoc

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
terbutryn	0/ 0	2/ 2	2/ 2
toxaphene	0/ 0	1/ 1	1/ 1
TOTAL SAMPLE RESULTS	0	42	42

COUNTY: Mono

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	2/ 2	2/ 2
1,3-D	0/ 0	2/ 2	2/ 2
2,4-D	0/ 0	2/ 3	2/ 3
demeton	0/ 0	2/ 3	2/ 3
endrin	0/ 0	2/ 3	2/ 3
lindane (gamma-BHC)	0/ 0	2/ 3	2/ 3
methyl bromide	0/ 0	2/ 2	2/ 2
silvex	0/ 0	2/ 3	2/ 3
toxaphene	0/ 0	2/ 3	2/ 3
TOTAL SAMPLE RESULTS	0	24	24

COUNTY: Monterey

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	115/ 215	115/ 215
1,3-D	0/ 0	119/ 220	119/ 220
2,4-D	0/ 0	4/ 4	4/ 4
BHC (all isomers)	0/ 0	2/ 4	2/ 4
DBCP	1/ 2	26/ 27	27/ 29
DCPA	0/ 0	22/ 22	22/ 22
DDD	0/ 0	2/ 2	2/ 2
DDE	0/ 0	2/ 2	2/ 2
DDT	0/ 0	2/ 2	2/ 2
EDB	0/ 0	27/ 27	27/ 27
PCNB	0/ 0	13/ 14	13/ 14
PCP	0/ 0	2/ 2	2/ 2
acephate	0/ 0	22/ 22	22/ 22
alachlor	0/ 0	22/ 22	22/ 22
aldicarb	0/ 0	28/ 28	28/ 28
aldrin	0/ 0	2/ 2	2/ 2
azinophos-methyl	0/ 0	22/ 22	22/ 22
benomyl	0/ 0	22/ 22	22/ 22
captan	0/ 0	26/ 28	26/ 28
carbaryl	0/ 0	2/ 2	2/ 2
carbendazim	0/ 0	20/ 20	20/ 20
carbofuran	0/ 0	26/ 27	26/ 27
chlordane	0/ 0	2/ 2	2/ 2

COUNTY: Monterey

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
chloropicrin	0/ 0	18/ 18	18/ 18
chlorothalonil	0/ 0	26/ 26	26/ 26
chlorpyrifos	0/ 0	25/ 25	25/ 25
dicofol	0/ 0	13/ 14	13/ 14
dieldrin	0/ 0	2/ 2	2/ 2
dimethoate	0/ 0	25/ 26	25/ 26
dinoseb	0/ 0	21/ 21	21/ 21
diphenamid	0/ 0	10/ 10	10/ 10
disulfoton	0/ 0	25/ 26	25/ 26
endosulfan	0/ 0	32/ 76	32/ 76
endosulfan sulfate	0/ 0	6/ 9	6/ 9
endrin	0/ 0	2/ 2	2/ 2
endrin aldehyde	0/ 0	6/ 9	6/ 9
heptachlor	0/ 0	2/ 2	2/ 2
heptachlor epoxide	0/ 0	2/ 2	2/ 2
hexachlorobenzene	0/ 0	2/ 2	2/ 2
lindane (gamma-BHC)	0/ 0	2/ 2	2/ 2
maneb	0/ 0	27/ 28	27/ 28
methamidophos	0/ 0	24/ 25	24/ 25
methomyl	0/ 0	25/ 26	25/ 26
methoxychlor	0/ 0	22/ 22	22/ 22
methyl bromide	0/ 0	119/ 218	119/ 218
oxamyl	0/ 0	22/ 22	22/ 22

COUNTY: Monterey

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIV	NEGATIVE	TOTAL
paraquat	0/ 0	17/ 17	17/ 17
phorate	0/ 0	16/ 16	16/ 16
prometryn	0/ 0	9/ 9	9/ 9
simazine	0/ 0	22/ 22	22/ 22
toxaphene	0/ 0	7/ 10	7/ 10
TOTAL SAMPLE RESULTS	2	1425	1427

COUNTY: Orange

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	28/ 53	28/ 53
1,3-D	0/ 0	28/ 59	28/ 59
2,4-D	0/ 0	26/ 26	26/ 26
BHC (all isomers)	0/ 0	22/ 46	22/ 46
DCPA	0/ 0	1/ 1	1/ 1
DDD	0/ 0	22/ 23	22/ 23
DDE	0/ 0	22/ 23	22/ 23
DDT	0/ 0	22/ 23	22/ 23
DEF	0/ 0	1/ 1	1/ 1
DNOC	0/ 0	1/ 1	1/ 1
EDB	0/ 0	25/ 25	25/ 25
MCPA, dimethylamine salt	0/ 0	1/ 1	1/ 1

COUNTY: Orange

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
PCP	0/ 0	23/ 24	23/ 24
alachlor	0/ 0	1/ 1	1/ 1
aldrin	0/ 0	22/ 23	22/ 23
atrazine	0/ 0	2/ 4	2/ 4
azinophos-methyl	0/ 0	1/ 1	1/ 1
benefin	0/ 0	1/ 1	1/ 1
benomyl	0/ 0	24/ 24	24/ 24
bromacil	0/ 0	1/ 1	1/ 1
captan	0/ 0	26/ 26	26/ 26
carbaryl	0/ 0	26/ 26	26/ 26
carbendazim	0/ 0	3/ 3	3/ 3
chlordane	0/ 0	22/ 23	22/ 23
chlordimeform	0/ 0	1/ 1	1/ 1
chloropicrin	0/ 0	26/ 26	26/ 26
chlorothalonil	0/ 0	6/ 6	6/ 6
chlorpyrifos	0/ 0	1/ 1	1/ 1
cyanazine	0/ 0	2/ 4	2/ 4
demeton	0/ 0	26/ 26	26/ 26
diazinon	0/ 0	1/ 1	1/ 1
dicofol	0/ 0	26/ 26	26/ 26
dieldrin	0/ 0	22/ 23	22/ 23
dimethoate	0/ 0	1/ 1	1/ 1
dinoseb	0/ 0	1/ 1	1/ 1

COUNTY: Orange

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
diphenamid	0/ 0	6/ 6	6/ 6
disulfoton	0/ 0	1/ 1	1/ 1
diuron	0/ 0	10/ 10	10/ 10
endosulfan	0/ 0	22/ 48	22/ 48
endosulfan sulfate	0/ 0	22/ 23	22/ 23
endothall	0/ 0	1/ 1	1/ 1
endrin	0/ 0	26/ 28	26/ 28
endrin aldehyde	0/ 0	22/ 23	22/ 23
ethion	0/ 0	1/ 1	1/ 1
fenamiphos	0/ 0	1/ 1	1/ 1
heptachlor	0/ 0	22/ 23	22/ 23
heptachlor epoxide	0/ 0	22/ 23	22/ 23
hexachlorobenzene	0/ 0	24/ 25	24/ 25
lindane (gamma-BHC)	0/ 0	26/ 28	26/ 28
malathion	0/ 0	1/ 1	1/ 1
methamidophos	0/ 0	1/ 1	1/ 1
methomyl	0/ 0	26/ 26	26/ 26
methoxychlor	0/ 0	26/ 26	26/ 26
methyl bromide	0/ 0	28/ 61	28/ 61
methyl parathion	0/ 0	1/ 1	1/ 1
mevinphos	0/ 0	1/ 1	1/ 1
paraquat	0/ 0	9/ 9	9/ 9

COUNTY: Orange

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
phorate	0/ 0	1/ 1	1/ 1
prometryn	0/ 0	2/ 4	2/ 4
propargite	0/ 0	1/ 1	1/ 1
silvex	0/ 0	26/ 26	26/ 26
simazine	1/ 2	9/ 12	10/ 14
toxaphene	0/ 0	26/ 28	26/ 28
TOTAL SAMPLE RESULTS	2	994	996

COUNTY: Placer

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	2/ 5	2/ 5
1,3-D	0/ 0	2/ 5	2/ 5
BHC (all isomers)	0/ 0	2/ 4	2/ 4
DDD	0/ 0	2/ 2	2/ 2
DDE	0/ 0	2/ 2	2/ 2
DDT	0/ 0	2/ 2	2/ 2
PCP	0/ 0	2/ 2	2/ 2
aldrin	0/ 0	2/ 2	2/ 2
chlordane	0/ 0	2/ 2	2/ 2

COUNTY: Placer

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dieldrin	0/ 0	2/ 2	2/ 2
endosulfan	0/ 0	2/ 4	2/ 4
endosulfan sulfate	0/ 0	2/ 2	2/ 2
endrin	0/ 0	2/ 2	2/ 2
endrin aldehyde	0/ 0	2/ 2	2/ 2
heptachlor	0/ 0	2/ 2	2/ 2
heptachlor epoxide	0/ 0	2/ 2	2/ 2
hexachlorobenzene	0/ 0	2/ 2	2/ 2
lindane (gamma-BHC)	0/ 0	2/ 2	2/ 2
methyl bromide	0/ 0	2/ 5	2/ 5
molinate	0/ 0	4/ 4	4/ 4
molinate sulfoxide	0/ 0	4/ 4	4/ 4
thiobencarb	0/ 0	4/ 4	4/ 4
thiobencarb sulfoxide	0/ 0	4/ 4	4/ 4
toxaphene	0/ 0	2/ 2	2/ 2
TOTAL SAMPLE RESULTS	0	69	69

COUNTY: Plumas

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	14/ 14	14/ 14
1,3-D	0/ 0	4/ 4	4/ 4

COUNTY: Plumas

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
2,4-D	0/ 0	9/ 9	9/ 9
BHC (all isomers)	0/ 0	2/ 4	2/ 4
DDD	0/ 0	2/ 2	2/ 2
DDE	0/ 0	2/ 2	2/ 2
DDT	0/ 0	2/ 2	2/ 2
PCP	0/ 0	4/ 4	4/ 4
aldicarb	0/ 0	4/ 4	4/ 4
aldrin	0/ 0	2/ 2	2/ 2
ametryn	0/ 0	4/ 4	4/ 4
atraton	0/ 0	4/ 4	4/ 4
atrazine	0/ 0	4/ 4	4/ 4
chlordane	0/ 0	2/ 2	2/ 2
chlorpyrifos	0/ 0	1/ 1	1/ 1
demeton	0/ 0	9/ 9	9/ 9
dieldrin	0/ 0	2/ 2	2/ 2
endosulfan	0/ 0	2/ 4	2/ 4
endosulfan sulfate	0/ 0	2/ 2	2/ 2
endrin	0/ 0	10/ 11	10/ 11
endrin aldehyde	0/ 0	2/ 2	2/ 2
heptachlor	0/ 0	2/ 2	2/ 2
heptachlor epoxide	0/ 0	2/ 2	2/ 2
hexachlorobenzene	0/ 0	3/ 3	3/ 3

COUNTY: Plumas

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
lindane (gamma-BHC)	0/ 0	10/ 11	10/ 11
methyl bromide	0/ 0	4/ 4	4/ 4
prometryn	0/ 0	3/ 3	3/ 3
propazine	0/ 0	4/ 4	4/ 4
silvex	0/ 0	9/ 9	9/ 9
simazine	0/ 0	4/ 4	4/ 4
simetryn	0/ 0	4/ 4	4/ 4
terbutryn	0/ 0	4/ 4	4/ 4
toxaphene	0/ 0	10/ 11	10/ 11
TOTAL SAMPLE RESULTS	0	153	153

COUNTY: Riverside

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	154/ 244	154/ 244
1,3-D	0/ 0	161/ 202	161/ 202
2,4,5-T	0/ 0	6/ 6	6/ 6
2,4-D	0/ 0	143/ 149	143/ 149
BHC (all isomers)	0/ 0	30/ 59	30/ 59

COUNTY: Riverside

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DBCP	32/ 115	100/ 139	132/ 254
DCPA	0/ 0	59/ 61	59/ 61
DDD	0/ 0	44/ 44	44/ 44
DDE	0/ 0	44/ 44	44/ 44
DDT	0/ 0	44/ 44	44/ 44
DDVP	0/ 0	2/ 2	2/ 2
DEF	0/ 0	21/ 21	21/ 21
DNOC	0/ 0	22/ 22	22/ 22
EDB	0/ 0	55/ 57	55/ 57
EPN	0/ 0	2/ 2	2/ 2
EPTC	0/ 0	28/ 28	28/ 28
MCPA (no salt)	0/ 0	1/ 1	1/ 1
MCPA, dimethylamine salt	0/ 0	26/ 27	26/ 27
PCNB	0/ 0	2/ 2	2/ 2
PCP	0/ 0	34/ 35	34/ 35
acephate	0/ 0	42/ 44	42/ 44
alachlor	0/ 0	59/ 61	59/ 61
aldicarb	0/ 0	41/ 41	41/ 41
aldrin	0/ 0	29/ 29	29/ 29
ametryn	0/ 0	2/ 2	2/ 2
atrazine	0/ 0	26/ 29	26/ 29
azinophos-methyl	0/ 0	66/ 68	66/ 68

COUNTY: Riverside

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
benefin	0/ 0	21/ 21	21/ 21
benomyl	0/ 0	8/ 8	8/ 8
bromacil	0/ 0	44/ 46	44/ 46
butylate	0/ 0	2/ 2	2/ 2
captan	0/ 0	59/ 61	59/ 61
carbaryl	0/ 0	73/ 74	73/ 74
carbofuran	1/ 1	28/ 28	29/ 29
chlordane	0/ 0	44/ 44	44/ 44
chlordimeform	0/ 0	19/ 19	19/ 19
chlorobenzilate	0/ 0	2/ 2	2/ 2
chloropicrin	0/ 0	88/ 92	88/ 92
chlorothalonil	0/ 0	59/ 61	59/ 61
chlorpropham	0/ 0	28/ 28	28/ 28
chlorpyrifos	0/ 0	39/ 39	39/ 39
cyanazine	0/ 0	26/ 28	26/ 28
cycloate	0/ 0	2/ 2	2/ 2
demeton	0/ 0	143/ 149	143/ 149
diazinon	0/ 0	39/ 39	39/ 39
dicofol	0/ 0	81/ 83	81/ 83
dicrotophos	0/ 0	2/ 2	2/ 2
dieldrin	0/ 0	29/ 29	29/ 29
dimethoate	1/ 1	76/ 80	77/ 81

COUNTY: Riverside

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dinoseb	0/ 0	27/ 27	27/ 27
dioxathion	0/ 0	2/ 2	2/ 2
diphenamid	0/ 0	21/ 21	21/ 21
disulfoton	0/ 0	45/ 45	45/ 45
diuron	0/ 0	71/ 73	71/ 73
endosulfan	0/ 0	89/ 182	89/ 182
endosulfan sulfate	0/ 0	75/ 97	75/ 97
endothall	0/ 0	19/ 19	19/ 19
endrin	0/ 0	145/ 177	145/ 177
endrin aldehyde	0/ 0	35/ 36	35/ 36
ethion	0/ 0	39/ 39	39/ 39
ethylan	0/ 0	2/ 2	2/ 2
fenamiphos	0/ 0	36/ 36	36/ 36
fluchloralin	0/ 0	20/ 20	20/ 20
heptachlor	0/ 0	52/ 53	52/ 53
heptachlor epoxide	0/ 0	52/ 53	52/ 53
hexachlorobenzene	0/ 0	35/ 36	35/ 36
lindane (gamma-BHC)	0/ 0	159/ 191	159/ 191
malathion	0/ 0	18/ 18	18/ 18
maneb	0/ 0	33/ 36	33/ 36
merphos	0/ 0	2/ 2	2/ 2
methamidophos	0/ 0	53/ 54	53/ 54

COUNTY: Riverside

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
methidathion	0/ 0	25/ 25	25/ 25
methomyl	0/ 0	72/ 73	72/ 73
methoxychlor	0/ 0	58/ 59	58/ 59
methyl bromide	0/ 0	155/ 241	155/ 241
methyl parathion	0/ 0	39/ 39	39/ 39
mevinphos	0/ 0	39/ 39	39/ 39
mirex	0/ 0	2/ 2	2/ 2
molinate	0/ 0	2/ 2	2/ 2
monocrotophos	0/ 0	2/ 2	2/ 2
napropamide	0/ 0	20/ 20	20/ 20
nitrofen	0/ 0	2/ 2	2/ 2
oryzalin	0/ 0	20/ 20	20/ 20
ovex	0/ 0	2/ 2	2/ 2
oxamyl	0/ 0	36/ 36	36/ 36
paraquat	0/ 0	29/ 30	29/ 30
parathion	0/ 0	1/ 2	1/ 2
pendimethalin	0/ 0	2/ 2	2/ 2
phorate	0/ 0	39/ 39	39/ 39
phosalone	0/ 0	2/ 2	2/ 2
phosmet	0/ 0	2/ 2	2/ 2
profluralin	0/ 0	2/ 2	2/ 2
prometryn	0/ 0	19/ 21	19/ 21

COUNTY: Riverside

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
propargite	0/ 0	19/ 19	19/ 19
propazine	0/ 0	3/ 3	3/ 3
propham	0/ 0	28/ 28	28/ 28
propyzamide	0/ 0	19/ 19	19/ 19
pyrethrins	0/ 0	2/ 2	2/ 2
ronnel	0/ 0	2/ 2	2/ 2
silvex	0/ 0	144/ 151	144/ 151
simazine	6/ 10	51/ 56	57/ 66
simetryn	0/ 0	2/ 2	2/ 2
sodium chlorate	0/ 0	2/ 2	2/ 2
terbutryn	0/ 0	2/ 2	2/ 2
tetrachlorvinphos	0/ 0	2/ 2	2/ 2
tetradifon	0/ 0	17/ 17	17/ 17
toxaphene	0/ 0	160/ 192	160/ 192
triadimefon	0/ 0	2/ 2	2/ 2
trichlorophon	0/ 0	33/ 33	33/ 33
trifluralin	0/ 0	2/ 2	2/ 2
vernolate	0/ 0	2/ 2	2/ 2
ziram	0/ 0	1/ 1	1/ 1
TOTAL SAMPLE RESULTS	127	4818	4945

COUNTY: Sacramento

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	93/ 113	93/ 113
1,3-D	0/ 0	94/ 100	94/ 100
2,4-D	0/ 0	35/ 38	35/ 38
BHC (all isomers)	0/ 0	22/ 33	22/ 33
DDD	0/ 0	22/ 22	22/ 22
DDE	0/ 0	22/ 22	22/ 22
DDT	0/ 0	22/ 22	22/ 22
PCP	0/ 0	4/ 4	4/ 4
alachlor	0/ 0	1/ 1	1/ 1
aldrin	0/ 0	22/ 22	22/ 22
atrazine	0/ 0	12/ 12	12/ 12
azinophos-methyl	0/ 0	2/ 2	2/ 2
bromacil	0/ 0	12/ 12	12/ 12
carbaryl	0/ 0	4/ 4	4/ 4
carbofuran	0/ 0	1/ 1	1/ 1
chlordane	0/ 0	16/ 16	16/ 16
chlorothalonil	0/ 0	1/ 1	1/ 1
chlorpyrifos	0/ 0	12/ 12	12/ 12
demeton	0/ 0	35/ 38	35/ 38
dicofol	0/ 0	5/ 5	5/ 5
dieldrin	0/ 0	22/ 22	22/ 22
dimethoate	0/ 0	1/ 1	1/ 1

COUNTY: Sacramento

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dinoseb	0/ 0	3/ 3	3/ 3
disulfoton	0/ 0	1/ 1	1/ 1
diuron	0/ 0	12/ 12	12/ 12
endosulfan	0/ 0	17/ 34	17/ 34
endosulfan sulfate	0/ 0	28/ 28	28/ 28
endrin	0/ 0	46/ 49	46/ 49
endrin aldehyde	0/ 0	18/ 18	18/ 18
heptachlor	0/ 0	22/ 22	22/ 22
heptachlor epoxide	0/ 0	22/ 22	22/ 22
hexachlorobenzene	0/ 0	14/ 14	14/ 14
lindane (gamma-BHC)	0/ 0	46/ 55	46/ 55
methomyl	0/ 0	2/ 2	2/ 2
methyl bromide	0/ 0	64/ 64	64/ 64
molinate	0/ 0	21/ 25	21/ 25
molinate sulfoxide	0/ 0	21/ 23	21/ 23
paraquat	0/ 0	1/ 1	1/ 1
silvex	0/ 0	35/ 38	35/ 38
thiobencarb	0/ 0	21/ 27	21/ 27
thiobencarb sulfoxide	0/ 0	18/ 20	18/ 20
toxaphene	0/ 0	51/ 56	51/ 56
TOTAL SAMPLE RESULTS	0	1017	1017

COUNTY: San Benito

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	12/ 15	12/ 15
1,3-D	0/ 0	14/ 14	14/ 14
2,4-D	0/ 0	1/ 1	1/ 1
BHC (all isomers)	0/ 0	1/ 3	1/ 3
DBCP	0/ 0	2/ 2	2/ 2
DDD	0/ 0	1/ 2	1/ 2
DDE	0/ 0	1/ 2	1/ 2
DDT	0/ 0	1/ 2	1/ 2
PCP	0/ 0	1/ 2	1/ 2
acephate	0/ 0	2/ 2	2/ 2
aldrin	0/ 0	1/ 2	1/ 2
azinophos-methyl	0/ 0	5/ 5	5/ 5
benomyl	0/ 0	3/ 4	3/ 4
captan	0/ 0	4/ 4	4/ 4
carbaryl	0/ 0	4/ 4	4/ 4
carbendazim	0/ 0	2/ 2	2/ 2
chlordane	0/ 0	1/ 1	1/ 1
chloropicrin	0/ 0	1/ 1	1/ 1
chlorothalonil	0/ 0	1/ 1	1/ 1
dieldrin	0/ 0	1/ 2	1/ 2

COUNTY: San Benito

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dimethoate	0/ 0	3/ 3	3/ 3
diphenamid	0/ 0	3/ 3	3/ 3
disulfoton	0/ 0	3/ 3	3/ 3
endosulfan	0/ 0	4/ 7	4/ 7
endosulfan sulfate	0/ 0	1/ 2	1/ 2
endrin	0/ 0	1/ 2	1/ 2
endrin aldehyde	0/ 0	1/ 2	1/ 2
heptachlor	0/ 0	1/ 2	1/ 2
heptachlor epoxide	0/ 0	1/ 2	1/ 2
hexachlorobenzene	0/ 0	1/ 2	1/ 2
lindane (gamma-BHC)	0/ 0	1/ 1	1/ 1
maneb	0/ 0	5/ 5	5/ 5
methomyl	0/ 0	5/ 5	5/ 5
methoxychlor	0/ 0	2/ 2	2/ 2
methyl bromide	0/ 0	14/ 17	14/ 17
paraquat	0/ 0	7/ 7	7/ 7
toxaphene	0/ 0	4/ 4	4/ 4
ziram	0/ 0	1/ 1	1/ 1
TOTAL SAMPLE RESULTS	0	141	141

COUNTY: San Bernardino

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	356/ 447	356/ 447
1,3-D	0/ 0	359/ 452	359/ 452
2,4,5-T	0/ 0	8/ 8	8/ 8
2,4-D	0/ 0	198/ 207	198/ 207
BHC (all isomers)	0/ 0	115/ 235	115/ 235
DBCP	64/ 171	136/ 225	200/ 396
DCPA	0/ 0	56/ 59	56/ 59
DDD	0/ 0	115/ 118	115/ 118
DDE	0/ 0	115/ 118	115/ 118
DDT	0/ 0	115/ 120	115/ 120
DDVP	0/ 0	7/ 7	7/ 7
DEF	0/ 0	25/ 26	25/ 26
DNOC	0/ 0	27/ 27	27/ 27
EDB	0/ 0	63/ 72	63/ 72
EPN	0/ 0	7/ 7	7/ 7
EPTC	0/ 0	43/ 43	43/ 43
MCPA, dimethylamine salt	0/ 0	5/ 5	5/ 5
PCNB	0/ 0	9/ 9	9/ 9
PCP	0/ 0	114/ 116	114/ 116
acephate	0/ 0	29/ 32	29/ 32
alachlor	0/ 0	26/ 26	26/ 26
aldicarb	0/ 0	43/ 43	43/ 43

COUNTY: San Bernardino

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
aldrin	0/ 0	115/ 118	115/ 118
ametryn	0/ 0	7/ 7	7/ 7
atrazine	0/ 0	176/ 191	176/ 191
azinophos-methyl	0/ 0	79/ 81	79/ 81
benefin	0/ 0	27/ 27	27/ 27
benomyl	0/ 0	16/ 16	16/ 16
bromacil	0/ 0	110/ 113	110/ 113
butylate	0/ 0	7/ 7	7/ 7
captan	0/ 0	26/ 26	26/ 26
carbaryl	0/ 0	36/ 36	36/ 36
carbofuran	0/ 0	42/ 43	42/ 43
chlordane	0/ 0	115/ 117	115/ 117
chlordecone	0/ 0	1/ 1	1/ 1
chlordimeform	0/ 0	18/ 18	18/ 18
chlorobenzilate	0/ 0	7/ 7	7/ 7
chloropicrin	0/ 0	51/ 52	51/ 52
chlorothalonil	0/ 0	26/ 26	26/ 26
chlorpropham	0/ 0	43/ 43	43/ 43
chlorpyrifos	0/ 0	48/ 48	48/ 48
cyanazine	0/ 0	12/ 12	12/ 12
cycloate	0/ 0	7/ 7	7/ 7
dalapon	0/ 0	14/ 14	14/ 14

COUNTY: San Bernardino

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
demeton	0/ 0	198/ 207	198/ 207
diazinon	0/ 0	43/ 43	43/ 43
dicofol	0/ 0	28/ 28	28/ 28
dicrotophos	0/ 0	7/ 7	7/ 7
dieldrin	0/ 0	115/ 118	115/ 118
dimethoate	0/ 0	72/ 75	72/ 75
dinoseb	0/ 0	46/ 48	46/ 48
dioxathion	0/ 0	7/ 7	7/ 7
diphenamid	0/ 0	33/ 33	33/ 33
disulfoton	0/ 0	69/ 70	69/ 70
diuron	0/ 0	148/ 152	148/ 152
endosulfan	0/ 0	127/ 252	127/ 252
endosulfan sulfate	0/ 0	127/ 132	127/ 132
endothall	0/ 0	18/ 18	18/ 18
endrin	0/ 0	241/ 293	241/ 293
endrin aldehyde	0/ 0	112/ 114	112/ 114
ethion	0/ 0	43/ 43	43/ 43
fenamiphos	0/ 0	36/ 36	36/ 36
heptachlor	0/ 0	115/ 118	115/ 118
heptachlor epoxide	0/ 0	115/ 118	115/ 118
hexachlorobenzene	0/ 0	106/ 109	106/ 109
lindane (gamma-BHC)	0/ 0	241/ 286	241/ 286

COUNTY: San Bernardino

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
malathion	0/ 0	16/ 16	16/ 16
methamidophos	0/ 0	40/ 40	40/ 40
methomyl	0/ 0	39/ 39	39/ 39
methoxychlor	0/ 0	144/ 150	144/ 150
methyl bromide	0/ 0	360/ 487	360/ 487
methyl parathion	0/ 0	43/ 43	43/ 43
mevinphos	0/ 0	43/ 43	43/ 43
mirex	0/ 0	9/ 9	9/ 9
monocrotophos	0/ 0	7/ 7	7/ 7
nitrofen	0/ 0	9/ 9	9/ 9
oxamyl	0/ 0	36/ 36	36/ 36
paraquat	0/ 0	45/ 48	45/ 48
phorate	0/ 0	42/ 42	42/ 42
phosalone	0/ 0	7/ 7	7/ 7
profluralin	0/ 0	9/ 9	9/ 9
prometryn	0/ 0	40/ 40	40/ 40
propargite	0/ 0	18/ 18	18/ 18
propazine	0/ 0	7/ 7	7/ 7
propham	0/ 0	39/ 39	39/ 39
pyrethrins	0/ 0	7/ 7	7/ 7
ronnel	0/ 0	7/ 7	7/ 7
silvex	0/ 0	199/ 207	199/ 207

COUNTY: San Bernardino

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
simazine	0/ 0	204/ 225	204/ 225
simetryn	0/ 0	7/ 7	7/ 7
sodium chlorate	0/ 0	7/ 7	7/ 7
terbutryn	0/ 0	7/ 14	7/ 14
toxaphene	0/ 0	247/ 292	247/ 292
triadimefon	0/ 0	7/ 14	7/ 14
trichloronate	0/ 0	1/ 1	1/ 1
trifluralin	0/ 0	9/ 9	9/ 9
TOTAL SAMPLE RESULTS	171	7598	7769

COUNTY: San Diego

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	1/ 1	21/ 26	22/ 27
1,3-D	0/ 0	22/ 23	22/ 23
2,4-D	0/ 0	13/ 13	13/ 13
BHC (all isomers)	0/ 0	1/ 2	1/ 2
DBCP	0/ 0	2/ 4	2/ 4
DCPA	0/ 0	1/ 1	1/ 1
DDD	0/ 0	1/ 1	1/ 1

COUNTY: San Diego

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES					
	POSITIVE		NEGATIVE		TOTAL	
DDE	0/	0	1/	1	1/	1
DDT	0/	0	1/	1	1/	1
DEF	0/	0	1/	1	1/	1
DNOC	0/	0	1/	1	1/	1
EDB	0/	0	4/	4	4/	4
EPTC	0/	0	1/	1	1/	1
PCP	0/	0	2/	2	2/	2
acephate	0/	0	5/	6	5/	6
alachlor	0/	0	1/	1	1/	1
aldicarb	0/	0	1/	1	1/	1
aldrin	0/	0	1/	1	1/	1
azinophos-methyl	0/	0	5/	6	5/	6
benefin	0/	0	1/	1	1/	1
benomyl	0/	0	1/	1	1/	1
bromacil	0/	0	1/	1	1/	1
captan	0/	0	1/	1	1/	1
carbaryl	0/	0	4/	4	4/	4
chlordane	0/	0	1/	1	1/	1
chlordimeform	0/	0	1/	1	1/	1
chloropicrin	0/	0	5/	6	5/	6
chlorothalonil	0/	0	2/	2	2/	2
chlorpropham	0/	0	1/	1	1/	1

COUNTY: San Diego

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES					
	POSITIVE		NEGATIVE		TOTAL	
chlorpyrifos	0/	0	8/	9	8/	9
demeton	0/	0	15/	15	15/	15
diazinon	0/	0	5/	6	5/	6
dicofol	0/	0	1/	1	1/	1
dieldrin	0/	0	1/	1	1/	1
dimethoate	0/	0	8/	9	8/	9
dinoseb	0/	0	1/	1	1/	1
diphenamid	0/	0	1/	1	1/	1
disulfoton	0/	0	6/	7	6/	7
diuron	0/	0	4/	4	4/	4
endosulfan	0/	0	1/	3	1/	3
endosulfan sulfate	0/	0	1/	2	1/	2
endothall	0/	0	1/	1	1/	1
endrin	0/	0	15/	16	15/	16
endrin aldehyde	0/	0	1/	1	1/	1
ethion	0/	0	5/	6	5/	6
fenamiphos	0/	0	5/	6	5/	6
heptachlor	0/	0	1/	1	1/	1
heptachlor epoxide	0/	0	1/	1	1/	1
hexachlorobenzene	0/	0	2/	2	2/	2
lindane (gamma-BHC)	0/	0	15/	16	15/	16
malathion	0/	0	3/	4	3/	4

COUNTY: San Diego

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
maneb	0/ 0	1/ 1	1/ 1
methamidophos	0/ 0	5/ 6	5/ 6
methidathion	0/ 0	3/ 4	3/ 4
methomyl	0/ 0	10/ 11	10/ 11
methoxychlor	0/ 0	8/ 9	8/ 9
methyl bromide	0/ 0	22/ 27	22/ 27
methyl parathion	0/ 0	5/ 6	5/ 6
mevinphos	0/ 0	5/ 6	5/ 6
oxamyl	0/ 0	4/ 4	4/ 4
paraquat	0/ 0	4/ 4	4/ 4
phorate	0/ 0	5/ 6	5/ 6
propargite	0/ 0	1/ 1	1/ 1
propham	0/ 0	1/ 1	1/ 1
silvex	0/ 0	15/ 15	15/ 15
simazine	0/ 0	3/ 3	3/ 3
toxaphene	0/ 0	15/ 16	15/ 16
trichlorophon	0/ 0	5/ 6	5/ 6
TOTAL SAMPLE RESULTS	1	354	355

COUNTY: San Francisco

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	4/ 4	4/ 4
1,3-D	0/ 0	4/ 4	4/ 4
2,4-D	0/ 0	3/ 3	3/ 3
BHC (all isomers)	0/ 0	1/ 2	1/ 2
DDD	0/ 0	1/ 1	1/ 1
DDE	0/ 0	1/ 1	1/ 1
DDT	0/ 0	1/ 1	1/ 1
PCNB	0/ 0	3/ 3	3/ 3
PCP	0/ 0	1/ 1	1/ 1
aldrin	0/ 0	1/ 1	1/ 1
carbaryl	0/ 0	3/ 3	3/ 3
chlordane	0/ 0	1/ 1	1/ 1
dieldrin	0/ 0	4/ 4	4/ 4
endosulfan	0/ 0	1/ 2	1/ 2
endosulfan sulfate	0/ 0	1/ 1	1/ 1
endrin	0/ 0	1/ 1	1/ 1
endrin aldehyde	0/ 0	1/ 1	1/ 1
glyphosate	0/ 0	3/ 3	3/ 3
heptachlor	0/ 0	1/ 1	1/ 1
heptachlor epoxide	0/ 0	1/ 1	1/ 1
hexachlorobenzene	0/ 0	1/ 1	1/ 1
lindane (gamma-BHC)	0/ 0	1/ 1	1/ 1

COUNTY: San Francisco

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
methoxychlor	0/ 0	3/ 3	3/ 3
methyl bromide	0/ 0	4/ 4	4/ 4
toxaphene	0/ 0	1/ 1	1/ 1
TOTAL SAMPLE RESULTS	0	49	49

COUNTY: San Joaquin

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	10/ 19	144/ 198	154/ 217
1,3-D	0/ 0	126/ 173	126/ 173
2,4-D	0/ 0	31/ 34	31/ 34
BHC (all isomers)	0/ 0	26/ 50	26/ 50
D-D mix	1/ 1	0/ 0	1/ 1
DBCP	85/ 304	191/ 371	276/ 675
DCPA	0/ 0	5/ 5	5/ 5
DDD	0/ 0	26/ 27	26/ 27
DDE	0/ 0	26/ 27	26/ 27
DDT	0/ 0	26/ 27	26/ 27
EDB	2/ 2	111/ 119	113/ 121
PCNB	0/ 0	1/ 1	1/ 1

COUNTY: San Joaquin

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
PCP	0/ 0	24/ 28	24/ 28
acephate	0/ 0	12/ 12	12/ 12
alachlor	0/ 0	7/ 7	7/ 7
aldicarb	0/ 0	5/ 5	5/ 5
aldrin	0/ 0	26/ 26	26/ 26
atrazine	0/ 0	18/ 18	18/ 18
azinophos-methyl	0/ 0	24/ 24	24/ 24
benomyl	0/ 0	5/ 5	5/ 5
bromacil	0/ 0	5/ 5	5/ 5
captan	0/ 0	25/ 25	25/ 25
carbaryl	0/ 0	40/ 40	40/ 40
carbendazim	0/ 0	1/ 1	1/ 1
carbofuran	0/ 0	37/ 37	37/ 37
chlordane	0/ 0	26/ 26	26/ 26
chloroallyl alcohol (cis/tran	0/ 0	2/ 2	2/ 2
chloropicrin	0/ 0	16/ 16	16/ 16
chlorothalonil	0/ 0	27/ 27	27/ 27
chlorpyrifos	0/ 0	3/ 3	3/ 3
demeton	0/ 0	15/ 17	15/ 17
diazinon	0/ 0	7/ 7	7/ 7
dicofol	0/ 0	29/ 29	29/ 29
dieldrin	0/ 0	26/ 26	26/ 26

COUNTY: San Joaquin

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dimethoate	0/ 0	19/ 19	19/ 19
dinoseb	0/ 0	25/ 25	25/ 25
diphenamid	0/ 0	6/ 6	6/ 6
disulfoton	0/ 0	4/ 4	4/ 4
diuron	0/ 0	19/ 19	19/ 19
endosulfan	0/ 0	27/ 54	27/ 54
endosulfan sulfate	0/ 0	26/ 26	26/ 26
endrin	0/ 0	32/ 37	32/ 37
endrin aldehyde	0/ 0	26/ 26	26/ 26
ethyl alcohol	0/ 0	1/ 1	1/ 1
heptachlor	0/ 0	26/ 26	26/ 26
heptachlor epoxide	0/ 0	26/ 26	26/ 26
hexachlorobenzene	0/ 0	25/ 29	25/ 29
lindane (gamma-BHC)	0/ 0	32/ 37	32/ 37
maneb	0/ 0	12/ 12	12/ 12
methamidophos	0/ 0	10/ 10	10/ 10
methomyl	0/ 0	16/ 16	16/ 16
methoxychlor	0/ 0	9/ 9	9/ 9
methyl bromide	0/ 0	110/ 169	110/ 169
molinate	0/ 0	3/ 7	3/ 7
molinate sulfoxide	0/ 0	3/ 6	3/ 6
paraquat	0/ 0	33/ 33	33/ 33

COUNTY: San Joaquin

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
phorate	0/ 0	9/ 9	9/ 9
silvex	0/ 0	11/ 12	11/ 12
simazine	0/ 0	23/ 23	23/ 23
thiobencarb	0/ 0	3/ 8	3/ 8
thiobencarb sulfoxide	0/ 0	3/ 4	3/ 4
toxaphene	0/ 0	36/ 43	36/ 43
ziram	0/ 0	15/ 15	15/ 15
TOTAL SAMPLE RESULTS	326	2129	2455

COUNTY: San Luis Obispo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	32/ 37	32/ 37
1,3-D	0/ 0	37/ 44	37/ 44
2,4-D	0/ 0	15/ 17	15/ 17
BHC (all isomers)	0/ 0	5/ 10	5/ 10
DBCP	0/ 0	17/ 17	17/ 17
DCPA	0/ 0	10/ 10	10/ 10
DDD	0/ 0	5/ 5	5/ 5
DDE	0/ 0	5/ 5	5/ 5

COUNTY: San Luis Obispo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DDT	0/ 0	5/ 5	5/ 5
EDB	0/ 0	2/ 2	2/ 2
PCP	0/ 0	5/ 5	5/ 5
acephate	0/ 0	10/ 10	10/ 10
alachlor	0/ 0	3/ 3	3/ 3
aldicarb	0/ 0	1/ 1	1/ 1
aldrin	0/ 0	5/ 5	5/ 5
atrazine	0/ 0	1/ 1	1/ 1
azinophos-methyl	0/ 0	12/ 12	12/ 12
benomyl	0/ 0	1/ 1	1/ 1
captan	0/ 0	8/ 8	8/ 8
carbaryl	0/ 0	7/ 7	7/ 7
carbofuran	0/ 0	19/ 20	19/ 20
chlordane	0/ 0	5/ 5	5/ 5
chloropicrin	0/ 0	9/ 9	9/ 9
chlorothalonil	0/ 0	10/ 10	10/ 10
chlorpyrifos	0/ 0	3/ 3	3/ 3
cyanazine	0/ 0	1/ 1	1/ 1
demeton	0/ 0	10/ 10	10/ 10
diazinon	0/ 0	2/ 2	2/ 2
dicofol	0/ 0	3/ 3	3/ 3
dieldrin	0/ 0	5/ 5	5/ 5

COUNTY: San Luis Obispo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dimethoate	0/ 0	10/ 10	10/ 10
dinoseb	0/ 0	1/ 1	1/ 1
disulfoton	0/ 0	8/ 8	8/ 8
diuron	0/ 0	1/ 1	1/ 1
endosulfan	0/ 0	15/ 25	15/ 25
endosulfan sulfate	0/ 0	10/ 10	10/ 10
endothall	0/ 0	1/ 1	1/ 1
endrin	0/ 0	7/ 7	7/ 7
endrin aldehyde	0/ 0	5/ 5	5/ 5
ethion	0/ 0	2/ 2	2/ 2
fenamiphos	0/ 0	6/ 6	6/ 6
heptachlor	0/ 0	5/ 5	5/ 5
heptachlor epoxide	0/ 0	5/ 5	5/ 5
hexachlorobenzene	0/ 0	5/ 5	5/ 5
lindane (gamma-BHC)	0/ 0	33/ 36	33/ 36
malathion	0/ 0	2/ 2	2/ 2
maneb	0/ 0	10/ 10	10/ 10
methamidophos	0/ 0	7/ 7	7/ 7
methomyl	0/ 0	12/ 12	12/ 12
methoxychlor	0/ 0	10/ 10	10/ 10
methyl bromide	0/ 0	37/ 46	37/ 46
methyl parathion	0/ 0	2/ 2	2/ 2

COUNTY: San Luis Obispo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
mevinphos	0/ 0	2/ 2	2/ 2
oxamyl	0/ 0	1/ 1	1/ 1
paraquat	0/ 0	21/ 22	21/ 22
phorate	0/ 0	11/ 12	11/ 12
prometryn	0/ 0	1/ 1	1/ 1
silvex	0/ 0	1/ 1	1/ 1
simazine	0/ 0	14/ 14	14/ 14
toxaphene	0/ 0	15/ 15	15/ 15
trichlorophon	0/ 0	2/ 2	2/ 2
ziram	0/ 0	2/ 2	2/ 2
TOTAL SAMPLE RESULTS	0	561	561

COUNTY: San Mateo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	37/ 52	32/ 52
1,3-D	0/ 0	37/ 54	37/ 54
2,4-D	0/ 0	5/ 5	5/ 5
BHC (all isomers)	0/ 0	20/ 48	20/ 48
DDD	0/ 0	20/ 28	20/ 28

COUNTY: San Mateo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DDE	0/ 0	20/ 28	20/ 28
DDT	0/ 0	20/ 28	20/ 28
DEF	0/ 0	8/ 8	8/ 8
EPN	0/ 0	1/ 1	1/ 1
PCNB	0/ 0	16/ 16	16/ 16
PCP	0/ 0	12/ 12	12/ 12
acephate	0/ 0	10/ 10	10/ 10
alachlor	0/ 0	2/ 2	2/ 2
aldicarb	0/ 0	13/ 13	13/ 13
aldrin	0/ 0	20/ 20	20/ 20
aminocarb	0/ 0	8/ 8	8/ 8
atrazine	0/ 0	2/ 2	2/ 2
azinophos-methyl	0/ 0	11/ 11	11/ 11
bendiocarb	0/ 0	8/ 8	8/ 8
benomyl	0/ 0	13/ 13	13/ 13
bufencarb	0/ 0	8/ 8	8/ 8
captan	0/ 0	9/ 9	9/ 9
carbaryl	0/ 0	24/ 24	24/ 24
carbendazim	0/ 0	13/ 13	13/ 13
carbofuran	0/ 0	8/ 8	8/ 8

COUNTY: San Mateo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
carbophenothion	0/ 0	8/ 8	8/ 8
chlordane	0/ 0	20/ 28	20/ 28
chloropicrin	0/ 0	2/ 2	2/ 2
chlorothalonil	0/ 0	6/ 6	6/ 6
diazinon	0/ 0	8/ 8	8/ 8
dicofol	0/ 0	5/ 5	5/ 5
dieldrin	0/ 0	20/ 20	20/ 20
dinoseb	0/ 0	2/ 2	2/ 2
dioxacarb	0/ 0	8/ 8	8/ 8
dioxathion	0/ 0	8/ 8	8/ 8
disulfoton	0/ 0	8/ 8	8/ 8
endosulfan	0/ 0	24/ 48	24/ 48
endosulfan sulfate	0/ 0	12/ 12	12/ 12
endrin	0/ 0	20/ 20	20/ 20
endrin aldehyde	0/ 0	12/ 12	12/ 12
ethion	0/ 0	7/ 7	7/ 7
ethylan	0/ 0	8/ 8	8/ 8
fenamiphos	0/ 0	4/ 4	4/ 4
heptachlor	0/ 0	20/ 20	20/ 20
heptachlor epoxide	0/ 0	20/ 20	20/ 20
hexachlorobenzene	0/ 0	12/ 12	12/ 12
lindane (gamma-BHC)	0/ 0	20/ 20	20/ 20

COUNTY: San Mateo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
malathion	0/ 0	8/ 8	8/ 8
maneb	0/ 0	8/ 8	8/ 8
methamidophos	0/ 0	4/ 4	4/ 4
methiocarb	0/ 0	8/ 8	8/ 8
methomyl	0/ 0	16/ 16	16/ 16
methoxychlor	0/ 0	24/ 24	24/ 24
methyl bromide	0/ 0	37/ 58	37/ 58
methyl parathion	0/ 0	8/ 8	8/ 8
mirex	0/ 0	8/ 8	8/ 8
oxamyl	0/ 0	5/ 5	5/ 5
paraquat	0/ 0	2/ 2	2/ 2
parathion	0/ 0	8/ 8	8/ 8
phorate	0/ 0	10/ 10	10/ 10
promecarb	0/ 0	8/ 8	8/ 8
propoxur	0/ 0	8/ 8	8/ 8
tetradifon	0/ 0	8/ 8	8/ 8
toxaphene	0/ 0	22/ 22	22/ 22
ziram	0/ 0	5/ 5	5/ 5
TOTAL SAMPLE RESULTS	0	933	933

COUNTY: Santa Barbara

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	36/ 41	36/ 41
1,3-D	0/ 0	42/ 49	42/ 49
2,4-D	0/ 0	29/ 29	29/ 29
BHC (all isomers)	0/ 0	14/ 28	14/ 28
DBCP	0/ 0	64/ 78	64/ 78
DCPA	0/ 0	12/ 12	12/ 12
DDD	0/ 0	14/ 14	14/ 14
DDE	0/ 0	14/ 14	14/ 14
DDT	0/ 0	14/ 14	14/ 14
DNOC	0/ 0	6/ 6	6/ 6
EDB	0/ 0	13/ 14	13/ 14
EPTC	0/ 0	1/ 1	1/ 1
MCPA, dimethylamine salt	0/ 0	1/ 1	1/ 1
PCNB	0/ 0	6/ 6	6/ 6
PCP	0/ 0	14/ 16	14/ 16
acephate	0/ 0	15/ 15	15/ 15
alachlor	0/ 0	13/ 13	13/ 13
aldicarb	0/ 0	6/ 6	6/ 6
aldrin	0/ 0	14/ 14	14/ 14
atrazine	0/ 0	7/ 7	7/ 7
azinophos-methyl	0/ 0	7/ 7	7/ 7
benomyl	0/ 0	21/ 23	21/ 23
bromacil	0/ 0	9/ 9	9/ 9

COUNTY: Santa Barbara

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
captan	0/ 0	19/ 19	19/ 19
carbaryl	0/ 0	26/ 26	26/ 26
carbendazim	0/ 0	15/ 17	15/ 17
carbofuran	0/ 0	18/ 18	18/ 18
chlordane	0/ 0	14/ 14	14/ 14
chloropicrin	0/ 0	20/ 20	20/ 20
chlorothalonil	0/ 0	11/ 11	11/ 11
chlorpropham	0/ 0	1/ 1	1/ 1
chlorpyrifos	0/ 0	10/ 10	10/ 10
cyanazine	0/ 0	7/ 7	7/ 7
demeton	0/ 0	30/ 30	30/ 30
diazinon	0/ 0	2/ 2	2/ 2
dicofol	0/ 0	18/ 18	18/ 18
dieldrin	0/ 0	14/ 17	14/ 17
dimethoate	0/ 0	21/ 21	21/ 21
dinoseb	0/ 0	11/ 11	11/ 11
diphenamid	0/ 0	7/ 7	7/ 7
disulfoton	0/ 0	14/ 14	14/ 14
diuron	0/ 0	13/ 13	13/ 13
endosulfan	0/ 0	30/ 53	30/ 53
endosulfan sulfate	0/ 0	19/ 22	19/ 22
endothall	0/ 0	6/ 6	6/ 6

COUNTY: Santa Barbara

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endrin	0/ 0	16/ 16	16/ 16
endrin aldehyde	0/ 0	14/ 14	14/ 14
ethion	0/ 0	1/ 1	1/ 1
fenamiphos	0/ 0	9/ 9	9/ 9
heptachlor	0/ 0	14/ 14	14/ 14
heptachlor epoxide	0/ 0	14/ 14	14/ 14
hexachlorobenzene	0/ 0	14/ 16	14/ 16
lindane (gamma-BHC)	0/ 0	17/ 18	17/ 18
malathion	0/ 0	2/ 2	2/ 2
maneb	0/ 0	10/ 10	10/ 10
methamidophos	0/ 0	10/ 10	10/ 10
methomyl	0/ 0	17/ 17	17/ 17
methoxychlor	0/ 0	24/ 24	24/ 24
methyl bromide	0/ 0	39/ 50	39/ 50
methyl parathion	0/ 0	1/ 1	1/ 1
mevinphos	0/ 0	1/ 1	1/ 1
oxamyl	0/ 0	11/ 11	11/ 11
paraquat	0/ 0	26/ 26	26/ 26
phorate	0/ 0	7/ 7	7/ 7
prometryn	0/ 0	8/ 8	8/ 8
propargite	0/ 0	1/ 1	1/ 1
propham	0/ 0	1/ 1	1/ 1

COUNTY: Santa Barbara

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
propyzamide	0/ 0	1/ 1	1/ 1
silvex	0/ 0	4/ 4	4/ 4
simazine	0/ 0	17/ 17	17/ 17
toxaphene	0/ 0	33/ 38	33/ 38
trichlorophon	0/ 0	1/ 1	1/ 1
ziram	0/ 0	6/ 6	6/ 6
TOTAL SAMPLE RESULTS	0	1112	1112

COUNTY: Santa Clara

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	179/ 383	179/ 383
1,3-D	0/ 0	185/ 391	185/ 391
2,4-D	0/ 0	24/ 24	24/ 24
BHC (all isomers)	0/ 0	29/ 59	29/ 59
DBCP	1/ 1	8/ 8	9/ 9
DDD	0/ 0	29/ 30	29/ 30
DDE	0/ 0	29/ 30	29/ 30
DDT	0/ 0	29/ 30	29/ 30
EDB	0/ 0	1/ 1	1/ 1
PCNB	0/ 0	13/ 13	13/ 13

COUNTY: Santa Clara

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
PCP	0/ 0	29/ 30	29/ 30
acephate	0/ 0	1/ 1	1/ 1
alachlor	0/ 0	3/ 3	3/ 3
aldicarb	0/ 0	9/ 13	9/ 13
aldrin	0/ 0	29/ 30	29/ 30
atrazine	0/ 0	4/ 4	4/ 4
azinophos-methyl	0/ 0	21/ 21	21/ 21
benomyl	0/ 0	40/ 40	40/ 40
captan	0/ 0	41/ 41	41/ 41
carbaryl	0/ 0	16/ 16	16/ 16
carbendazim	0/ 0	40/ 40	40/ 40
carbofuran	0/ 0	4/ 4	4/ 4
chlordane	0/ 0	29/ 29	29/ 29
chloropicrin	0/ 0	6/ 6	6/ 6
chlorothalonil	0/ 0	2/ 2	2/ 2
demeton	0/ 0	5/ 5	5/ 5
dicofol	0/ 0	4/ 4	4/ 4
dieldrin	0/ 0	29/ 30	29/ 30
dimethoate	0/ 0	7/ 7	7/ 7
dinoseb	0/ 0	8/ 8	8/ 8
diphenamid	0/ 0	5/ 5	5/ 5
disulfoton	0/ 0	2/ 2	2/ 2

COUNTY: Santa Clara

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endosulfan	0/ 0	36/ 73	36/ 73
endosulfan sulfate	0/ 0	29/ 30	29/ 30
endrin	0/ 0	33/ 34	33/ 34
endrin aldehyde	0/ 0	29/ 29	29/ 29
fenamiphos	0/ 0	4/ 4	4/ 4
heptachlor	0/ 0	29/ 30	29/ 30
heptachlor epoxide	0/ 0	29/ 30	29/ 30
hexachlorobenzene	0/ 0	29/ 30	29/ 30
lindane (gamma-BHC)	0/ 0	33/ 34	33/ 34
maneb	0/ 0	34/ 34	34/ 34
methomyl	0/ 0	12/ 12	12/ 12
methoxychlor	0/ 0	16/ 16	16/ 16
methyl bromide	0/ 0	185/ 399	185/ 399
oxamyl	0/ 0	7/ 7	7/ 7
paraquat	0/ 0	18/ 18	18/ 18
phorate	0/ 0	3/ 3	3/ 3
silvex	0/ 0	5/ 5	5/ 5
toxaphene	0/ 0	37/ 38	37/ 38
ziram	0/ 0	16/ 16	16/ 16
TOTAL SAMPLE RESULTS	1	2152	2153

COUNTY: Santa Cruz

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	109/ 133	109/ 133
1,3-D	0/ 0	110/ 129	110/ 129
2,4-D	0/ 0	3/ 3	3/ 3
BHC (all isomers)	0/ 0	7/ 14	7/ 14
DBCP	0/ 0	36/ 37	36/ 37
DCPA	0/ 0	4/ 4	4/ 4
DDD	0/ 0	34/ 35	34/ 35
DDE	0/ 0	34/ 35	34/ 35
DDT	0/ 0	34/ 35	34/ 35
DEF	0/ 0	2/ 2	2/ 2
DNOC	0/ 0	17/ 17	17/ 17
EDB	0/ 0	9/ 9	9/ 9
EPTC	0/ 0	1/ 1	1/ 1
PCNB	0/ 0	30/ 31	30/ 31
PCP	0/ 0	7/ 7	7/ 7
acephate	0/ 0	18/ 19	18/ 19
alachlor	0/ 0	31/ 32	31/ 32
aldicarb	0/ 0	3/ 3	3/ 3

COUNTY: Santa Cruz

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
aldrin	0/ 0	7/ 7	7/ 7
atrazine	0/ 0	22/ 22	22/ 22
azinophos-methyl	0/ 0	3/ 5	3/ 5
benefin	0/ 0	2/ 2	2/ 2
benomyl	0/ 0	34/ 35	34/ 35
bromacil	0/ 0	29/ 30	29/ 30
captan	0/ 0	22/ 23	22/ 23
carbaryl	0/ 0	30/ 31	30/ 31
carbendazim	0/ 0	3/ 3	3/ 3
carbofuran	0/ 0	38/ 39	38/ 39
chlordane	0/ 0	34/ 35	34/ 35
chlordimeform	0/ 0	2/ 2	2/ 2
chloropicrin	0/ 0	20/ 21	20/ 21
chlorothalonil	0/ 0	32/ 33	32/ 33
chlorpropham	0/ 0	28/ 29	28/ 29
chlorpyrifos	0/ 0	30/ 33	30/ 33
cyanazine	0/ 0	2/ 2	2/ 2
demeton	0/ 0	4/ 4	4/ 4
diazinon	0/ 0	3/ 5	3/ 5
dicofol	0/ 0	31/ 32	31/ 32
dieldrin	0/ 0	7/ 7	7/ 7
dimethoate	0/ 0	22/ 24	22/ 24

COUNTY: Santa Cruz

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dinoseb	0/ 0	17/ 17	17/ 17
diphenamid	0/ 0	29/ 30	29/ 30
disulfoton	0/ 0	30/ 33	30/ 33
diuron	0/ 0	31/ 32	31/ 32
endosulfan	0/ 0	57/ 77	57/ 77
endosulfan sulfate	0/ 0	9/ 11	9/ 11
endothall	0/ 0	8/ 9	8/ 9
endrin	0/ 0	7/ 8	7/ 8
endrin aldehyde	0/ 0	9/ 11	9/ 11
ethion	0/ 0	3/ 5	3/ 5
fenamiphos	0/ 0	30/ 33	30/ 33
heptachlor	0/ 0	7/ 7	7/ 7
heptachlor epoxide	0/ 0	7/ 7	7/ 7
hexachlorobenzene	0/ 0	7/ 7	7/ 7
lindane (gamma-BHC)	0/ 0	9/ 11	9/ 11
maneb	0/ 0	30/ 31	30/ 31
methamidophos	0/ 0	18/ 21	18/ 21
methomyl	0/ 0	30/ 31	30/ 31
methoxychlor	0/ 0	30/ 33	30/ 33
methyl bromide	0/ 0	110/ 134	110/ 134
methyl parathion	0/ 0	3/ 5	3/ 5
mevinphos	0/ 0	3/ 5	3/ 5

COUNTY: Santa Cruz

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
oxamyl	0/ 0	30/ 31	30/ 31
paraquat	0/ 0	23/ 24	23/ 24
parathion	0/ 0	27/ 28	27/ 28
permethrin (cis and trans)	0/ 0	2/ 4	2/ 4
phorate	0/ 0	22/ 24	22/ 24
prometryn	0/ 0	22/ 22	22/ 22
propargite	0/ 0	2/ 2	2/ 2
propham	0/ 0	1/ 1	1/ 1
propyzamide	0/ 0	2/ 2	2/ 2
simazine	0/ 0	28/ 28	28/ 28
simetryn	0/ 0	1/ 1	1/ 1
toxaphene	0/ 0	11/ 15	11/ 15
trichlorophon	0/ 0	3/ 5	3/ 5
ziram	0/ 0	29/ 30	29/ 30
TOTAL SAMPLE RESULTS	0	1745	1745

COUNTY: Shasta

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	18/ 18	18/ 18
1,3-D	0/ 0	12/ 12	12/ 12

COUNTY: Shasta

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
2,4-D	0/ 0	7/ 7	7/ 7
BHC (all isomers)	0/ 0	4/ 8	4/ 8
DDD	0/ 0	4/ 4	4/ 4
DDE	0/ 0	4/ 4	4/ 4
DDT	0/ 0	4/ 4	4/ 4
PCP	0/ 0	5/ 5	5/ 5
acrolein	0/ 0	3/ 3	3/ 3
alachlor	0/ 0	1/ 1	1/ 1
aldicarb	0/ 0	11/ 11	11/ 11
aldrin	0/ 0	4/ 4	4/ 4
ametryn	0/ 0	11/ 11	11/ 11
aminocarb	0/ 0	1/ 1	1/ 1
amitrole	0/ 0	3/ 3	3/ 3
atraton	0/ 0	11/ 12	11/ 12
atrazine	0/ 0	11/ 11	11/ 11
carbaryl	0/ 0	3/ 3	3/ 3
carbofuran	0/ 0	2/ 2	2/ 2
chlordane	0/ 0	4/ 4	4/ 4
chloropicrin	0/ 0	1/ 2	1/ 2
demeton	0/ 0	7/ 7	7/ 7
diazinon	0/ 0	3/ 3	3/ 3
dieldrin	0/ 0	4/ 4	4/ 4

COUNTY: Shasta

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
disulfoton	0/ 0	3/ 3	3/ 3
diuron	0/ 0	4/ 4	4/ 4
endosulfan	0/ 0	4/ 8	4/ 8
endosulfan sulfate	0/ 0	4/ 4	4/ 4
endothall	0/ 0	1/ 2	1/ 2
endrin	0/ 0	11/ 11	11/ 11
endrin aldehyde	0/ 0	4/ 4	4/ 4
ethion	0/ 0	3/ 3	3/ 3
glyphosate	0/ 0	2/ 2	2/ 2
heptachlor	0/ 0	4/ 4	4/ 4
heptachlor epoxide	0/ 0	4/ 4	4/ 4
hexachlorobenzene	0/ 0	4/ 4	4/ 4
lindane (gamma-BHC)	0/ 0	11/ 11	11/ 11
malathion	0/ 0	3/ 3	3/ 3
methiocarb	0/ 0	1/ 1	1/ 1
methomyl	0/ 0	1/ 1	1/ 1
methoxychlor	0/ 0	3/ 3	3/ 3
methyl bromide	0/ 0	4/ 4	4/ 4
paraquat	0/ 0	2/ 2	2/ 2
parathion	0/ 0	3/ 6	3/ 6
prometryn	0/ 0	11/ 11	11/ 11
propazine	0/ 0	11/ 11	11/ 11

COUNTY: Shasta

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
propoxur	0/ 0	1/ 1	1/ 1
silvex	0/ 0	7/ 7	7/ 7
simazine	0/ 0	11/ 11	11/ 11
simetryn	0/ 0	11/ 11	11/ 11
terbutryn	0/ 0	11/ 11	11/ 11
toxaphene	0/ 0	11/ 11	11/ 11
ziram	0/ 0	3/ 3	3/ 3
TOTAL SAMPLE RESULTS	0	305	305

COUNTY: Sierra

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	2/ 2	2/ 2
2,4-D	0/ 0	1/ 1	1/ 1
BHC (all isomers)	0/ 0	1/ 2	1/ 2
DDD	0/ 0	1/ 1	1/ 1
DDE	0/ 0	1/ 1	1/ 1
DDT	0/ 0	1/ 1	1/ 1
PCP	0/ 0	1/ 1	1/ 1
aldicarb	0/ 0	1/ 1	1/ 1

COUNTY: Sierra

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
aldrin	0/ 0	1/ 1	1/ 1
ametryn	0/ 0	1/ 1	1/ 1
atraton	0/ 0	1/ 1	1/ 1
atrazine	0/ 0	1/ 1	1/ 1
chlordane	0/ 0	1/ 1	1/ 1
dieldrin	0/ 0	1/ 1	1/ 1
endosulfan	0/ 0	1/ 2	1/ 2
endosulfan sulfate	0/ 0	1/ 1	1/ 1
endrin	0/ 0	1/ 1	1/ 1
endrin aldehyde	0/ 0	1/ 1	1/ 1
heptachlor	0/ 0	1/ 1	1/ 1
heptachlor epoxide	0/ 0	1/ 1	1/ 1
hexachlorobenzene	0/ 0	1/ 1	1/ 1
lindane (gamma-BHC)	0/ 0	1/ 1	1/ 1
prometryn	0/ 0	1/ 1	1/ 1
propazine	0/ 0	1/ 1	1/ 1
simazine	0/ 0	1/ 1	1/ 1
simetryn	0/ 0	1/ 1	1/ 1
terbutryn	0/ 0	1/ 1	1/ 1
toxaphene	0/ 0	1/ 1	1/ 1
TOTAL SAMPLE RESULTS	0	31	31

COUNTY: Siskiyou

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	9/ 9	9/ 9
1,3-D	0/ 0	9/ 9	9/ 9
2,4-D	0/ 0	8/ 8	8/ 8
PCP	0/ 0	3/ 3	3/ 3
aldicarb	0/ 0	8/ 9	8/ 9
ametryn	0/ 0	8/ 9	8/ 9
aminocarb	0/ 0	4/ 4	4/ 4
atraton	0/ 0	8/ 9	8/ 9
atrazine	1/ 2	7/ 7	8/ 9
carbaryl	0/ 0	4/ 4	4/ 4
carbofuran	0/ 0	4/ 4	4/ 4
demeton	0/ 0	8/ 8	8/ 8
diazinon	0/ 0	1/ 1	1/ 1
disulfoton	0/ 0	1/ 1	1/ 1
endrin	0/ 0	8/ 8	8/ 8
ethion	0/ 0	1/ 1	1/ 1
hexazinone	0/ 0	3/ 3	3/ 3
lindane (gamma-BHC)	0/ 0	8/ 8	8/ 8
malathion	0/ 0	1/ 1	1/ 1
methiocarb	0/ 0	4/ 4	4/ 4
methoxychlor	0/ 0	1/ 1	1/ 1
methyl bromide	0/ 0	9/ 9	9/ 9

COUNTY: Siskiyou

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
paraquat	0/ 0	4/ 4	4/ 4
parathion	0/ 0	1/ 2	1/ 2
prometryn	0/ 0	8/ 9	8/ 9
propazine	0/ 0	8/ 9	8/ 9
propoxur	0/ 0	4/ 4	4/ 4
silvex	0/ 0	8/ 8	8/ 8
simazine	1/ 2	7/ 7	8/ 9
simetryn	0/ 0	8/ 9	8/ 9
terbutryn	0/ 0	8/ 9	8/ 9
toxaphene	0/ 0	8/ 8	8/ 8
ziram	0/ 0	4/ 4	4/ 4
TOTAL SAMPLE RESULTS	4	193	197

COUNTY: Solano

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	23/ 34	23/ 34
1,3-D	0/ 0	24/ 36	24/ 36
2,4-D	0/ 0	1/ 1	1/ 1
DBCP	0/ 0	14/ 16	14/ 16

COUNTY: Solano

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DCPA	0/ 0	2/ 2	2/ 2
DNOC	0/ 0	16/ 16	16/ 16
EDB	0/ 0	14/ 14	14/ 14
PCNB	0/ 0	2/ 2	2/ 2
acephate	0/ 0	13/ 13	13/ 13
alachlor	0/ 0	22/ 22	22/ 22
aldicarb	0/ 0	4/ 4	4/ 4
azinophos-methyl	0/ 0	15/ 15	15/ 15
benomyl	0/ 0	14/ 14	14/ 14
bromacil	0/ 0	4/ 4	4/ 4
captan	0/ 0	14/ 14	14/ 14
carbaryl	0/ 0	17/ 17	17/ 17
carbendazim	0/ 0	10/ 10	10/ 10
carbofuran	0/ 0	16/ 16	16/ 16
chloropicrin	0/ 0	1/ 1	1/ 1
chlorothalonil	0/ 0	16/ 16	16/ 16
chlorpyrifos	0/ 0	16/ 16	16/ 16
cyanazine	0/ 0	11/ 11	11/ 11
demeton	0/ 0	5/ 5	5/ 5
diazinon	0/ 0	4/ 4	4/ 4
dicofol	0/ 0	16/ 16	16/ 16
dimethoate	0/ 0	12/ 12	12/ 12

COUNTY: Solano

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dinoseb	0/ 0	16/ 16	16/ 16
disulfoton	0/ 0	16/ 16	16/ 16
endosulfan	0/ 0	16/ 31	16/ 31
endothall	0/ 0	7/ 7	7/ 7
endrin	0/ 0	1/ 1	1/ 1
lindane (gamma-BHC)	0/ 0	1/ 1	1/ 1
maneb	0/ 0	14/ 14	14/ 14
methamidophos	0/ 0	11/ 11	11/ 11
methomyl	0/ 0	16/ 16	16/ 16
methoxychlor	0/ 0	17/ 17	17/ 17
methyl bromide	0/ 0	21/ 30	21/ 30
metolachlor	0/ 0	8/ 8	8/ 8
paraquat	0/ 0	15/ 15	15/ 15
phorate	0/ 0	16/ 16	16/ 16
silvex	0/ 0	1/ 1	1/ 1
simazine	0/ 0	12/ 12	12/ 12
toxaphene	0/ 0	5/ 5	5/ 5
ziram	0/ 0	14/ 14	14/ 14
TOTAL SAMPLE RESULTS	0	562	562

COUNTY: Sonoma

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	53/ 55	53/ 55
1,3-D	0/ 0	53/ 55	53/ 55
2,4-D	0/ 0	11/ 12	11/ 12
BHC (all isomers)	0/ 0	3/ 6	3/ 6
DDD	0/ 0	3/ 3	3/ 3
DDE	0/ 0	3/ 3	3/ 3
DDT	0/ 0	3/ 3	3/ 3
PCP	0/ 0	3/ 3	3/ 3
aldrin	0/ 0	3/ 3	3/ 3
atrazine	0/ 0	6/ 6	6/ 6
captan	0/ 0	6/ 6	6/ 6
carbaryl	0/ 0	2/ 2	2/ 2
chlordane	0/ 0	3/ 3	3/ 3
demeton	0/ 0	11/ 12	11/ 12
dicofol	0/ 0	5/ 5	5/ 5
dieldrin	0/ 0	3/ 3	3/ 3
dimethoate	0/ 0	2/ 2	2/ 2
dinoseb	0/ 0	2/ 2	2/ 2
endosulfan	0/ 0	8/ 16	8/ 16
endosulfan sulfate	0/ 0	3/ 3	3/ 3
endrin	0/ 0	14/ 15	14/ 15
endrin aldehyde	0/ 0	3/ 3	3/ 3
heptachlor	0/ 0	3/ 3	3/ 3
heptachlor epoxide	0/ 0	3/ 3	3/ 3

COUNTY: Sonoma

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
hexachlorobenzene	0/ 0	3/ 3	3/ 3
lindane (gamma-BHC)	0/ 0	10/ 10	10/ 10
maneb	0/ 0	2/ 2	2/ 2
methoxychlor	0/ 0	6/ 6	6/ 6
methyl bromide	0/ 0	53/ 55	53/ 55
paraquat	0/ 0	3/ 3	3/ 3
silvex	0/ 0	11/ 12	11/ 12
simazine	0/ 0	6/ 6	6/ 6
toxaphene	0/ 0	14/ 15	14/ 15
TOTAL SAMPLE RESULTS	0	339	339

COUNTY: Stanislaus

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	99/ 115	99/ 115
1,3-D	0/ 0	77/ 79	77/ 79
2,4-D	0/ 0	33/ 34	33/ 34
BHC (all isomers)	0/ 0	10/ 20	10/ 20
DBCP	113/ 264	170/ 253	283/ 517
DDD	0/ 0	35/ 35	35/ 35

COUNTY: Stanislaus

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DDE	0/ 0	35/ 35	35/ 35
DDT	0/ 0	35/ 35	35/ 35
EDB	2/ 2	69/ 71	71/ 73
PCP	0/ 0	17/ 17	17/ 17
acephate	0/ 0	10/ 10	10/ 10
alachlor	0/ 0	1/ 1	1/ 1
aldrin	0/ 0	10/ 10	10/ 10
atrazine	0/ 0	9/ 9	9/ 9
azinophos-methyl	0/ 0	17/ 17	17/ 17
benomyl	0/ 0	19/ 19	19/ 19
captan	0/ 0	23/ 23	23/ 23
carbaryl	0/ 0	32/ 32	32/ 32
carbendazim	0/ 0	8/ 8	8/ 8
carbofuran	0/ 0	13/ 13	13/ 13
chlordane	0/ 0	35/ 35	35/ 35
chlordecone	0/ 0	1/ 1	1/ 1
chloropicrin	0/ 0	2/ 2	2/ 2
chlorothalonil	0/ 0	2/ 2	2/ 2
chlorpyrifos	0/ 0	8/ 8	8/ 8
demeton	0/ 0	31/ 32	31/ 32
dicofol	0/ 0	35/ 35	35/ 35
dieldrin	0/ 0	10/ 10	10/ 10

COUNTY: Stanislaus

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
dimethoate	0/ 0	12/ 12	12/ 12
dinoseb	0/ 0	29/ 29	29/ 29
disulfoton	0/ 0	2/ 2	2/ 2
diuron	0/ 0	10/ 10	10/ 10
endosulfan	0/ 0	36/ 75	36/ 75
endosulfan sulfate	0/ 0	32/ 32	32/ 32
endrin	0/ 0	41/ 42	41/ 42
endrin aldehyde	0/ 0	10/ 10	10/ 10
heptachlor	0/ 0	35/ 35	35/ 35
heptachlor epoxide	0/ 0	35/ 35	35/ 35
hexachlorobenzene	0/ 0	10/ 10	10/ 10
lindane (gamma-BHC)	0/ 0	66/ 67	66/ 67
maneb	0/ 0	9/ 9	9/ 9
methomyl	0/ 0	1/ 1	1/ 1
methoxychlor	0/ 0	52/ 52	52/ 52
methyl bromide	0/ 0	72/ 104	72/ 104
molinate	0/ 0	8/ 8	8/ 8
molinate sulfoxide	0/ 0	8/ 8	8/ 8
paraquat	0/ 0	15/ 15	15/ 15
phorate	0/ 0	1/ 1	1/ 1
silvex	0/ 0	31/ 32	31/ 32
simazine	0/ 0	12/ 12	12/ 12

COUNTY: Stanislaus

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
tetradifon	0/ 0	25/ 25	25/ 25
thiobencarb	0/ 0	8/ 8	8/ 8
thiobencarb sulfoxide	0/ 0	7/ 7	7/ 7
toxaphene	0/ 0	68/ 73	68/ 73
ziram	0/ 0	31/ 31	31/ 31
TOTAL SAMPLE RESULTS	266	1706	1972

COUNTY: Sutter

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	1/ 1	2/ 2	3/ 3
1,3-D	0/ 0	1/ 1	1/ 1
2,4-D	0/ 0	1/ 1	1/ 1
DBCP	11/ 36	8/ 22	19/ 58
bromacil	2/ 5	1/ 2	3/ 7
captan	0/ 0	1/ 1	1/ 1
carbaryl	0/ 0	1/ 1	1/ 1
carbofuran	0/ 0	1/ 1	1/ 1
demeton	0/ 0	1/ 1	1/ 1
dimethoate	0/ 0	1/ 1	1/ 1
diuron	0/ 0	1/ 1	1/ 1

COUNTY: Sutter

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endrin	0/ 0	1/ 1	1/ 1
lindane (gamma-BHC)	0/ 0	1/ 1	1/ 1
methomyl	0/ 0	1/ 1	1/ 1
methoxychlor	0/ 0	1/ 1	1/ 1
methyl bromide	0/ 0	1/ 1	1/ 1
molinate	0/ 0	17/ 25	17/ 25
molinate sulfoxide	0/ 0	17/ 23	17/ 23
silvex	0/ 0	1/ 1	1/ 1
thiobencarb	0/ 0	17/ 29	17/ 29
thiobencarb sulfoxide	0/ 0	16/ 21	16/ 21
toxaphene	0/ 0	1/ 1	1/ 1
ziram	0/ 0	1/ 1	1/ 1
TOTAL SAMPLE RESULTS	42	140	182

COUNTY: Tehama

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	13/ 13	13/ 13
1,3-D	0/ 0	13/ 13	13/ 13
2,4-D	0/ 0	8/ 9	8/ 9

COUNTY: Tehama

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
BHC (all isomers)	0/ 0	1/ 2	1/ 2
DDD	0/ 0	1/ 1	1/ 1
DDE	0/ 0	1/ 1	1/ 1
DDT	0/ 0	1/ 1	1/ 1
MCPA, dimethylamine salt	0/ 0	6/ 6	6/ 6
PCP	0/ 0	1/ 1	1/ 1
aldicarb	0/ 0	4/ 4	4/ 4
aldrin	0/ 0	1/ 1	1/ 1
ametryn	0/ 0	4/ 4	4/ 4
atraton	0/ 0	4/ 4	4/ 4
atrazine	0/ 0	4/ 4	4/ 4
benomyl	0/ 0	2/ 2	2/ 2
captan	0/ 0	2/ 2	2/ 2
carbaryl	0/ 0	3/ 3	3/ 3
carbofuran	0/ 0	3/ 3	3/ 3
carbophenothion	0/ 0	1/ 2	1/ 2
chlordane	0/ 0	1/ 1	1/ 1
chlorpyrifos	0/ 0	2/ 2	2/ 2
demeton	0/ 0	8/ 9	8/ 9
diazinon	0/ 0	3/ 3	3/ 3
dicamba	0/ 0	6/ 6	6/ 6
dieldrin	0/ 0	1/ 1	1/ 1

COUNTY: Tehama

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
disulfoton	0/ 0	3/ 3	3/ 3
diuron	0/ 0	3/ 3	3/ 3
endosulfan	0/ 0	1/ 2	1/ 2
endosulfan sulfate	0/ 0	1/ 1	1/ 1
endrin	0/ 0	9/ 9	9/ 9
endrin aldehyde	0/ 0	1/ 1	1/ 1
ethion	0/ 0	3/ 3	3/ 3
glyphosate	0/ 0	1/ 1	1/ 1
heptachlor	0/ 0	1/ 1	1/ 1
heptachlor epoxide	0/ 0	1/ 1	1/ 1
hexachlorobenzene	0/ 0	1/ 1	1/ 1
lindane (gamma-BHC)	0/ 0	9/ 9	9/ 9
malathion	0/ 0	3/ 4	3/ 4
methomyl	0/ 0	3/ 3	3/ 3
methoxychlor	0/ 0	3/ 3	3/ 3
molinate	1/ 11	27/ 62	28/ 73
molinate sulfoxide	2/ 3	21/ 56	23/ 59
napropamide	0/ 0	1/ 1	1/ 1
paraquat	0/ 0	2/ 2	2/ 2
parathion	0/ 0	3/ 6	3/ 6
phosalone	0/ 0	2/ 2	2/ 2
prometryn	0/ 0	4/ 4	4/ 4

COUNTY: Tehama

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
propazine	0/ 0	4/ 4	4/ 4
screen (chlorinated hydrocarb)	0/ 0	1/ 2	1/ 2
screen (organophosphate)	0/ 0	1/ 2	1/ 2
silvex	0/ 0	7/ 7	7/ 7
simazine	0/ 0	4/ 4	4/ 4
simetryn	0/ 0	4/ 4	4/ 4
terbutryn	0/ 0	4/ 4	4/ 4
thiobencarb	0/ 0	5/ 5	5/ 5
thiobencarb sulfoxide	0/ 0	4/ 4	4/ 4
toxaphene	0/ 0	9/ 9	9/ 9
ziram	0/ 0	2/ 2	2/ 2
TOTAL SAMPLE RESULTS	14	323	337

COUNTY: Tulare

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	1/ 2	98/ 130	99/ 132
1,3-D	0/ 0	106/ 127	106/ 127
2,4,5-T	0/ 0	2/ 2	2/ 2
2,4-D	0/ 0	18/ 18	18/ 18
BHC (all isomers)	0/ 0	5/ 10	5/ 10

COUNTY: Tulare

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DBCP	97/ 259	146/ 177	243/ 436
DCPA	0/ 0	3/ 3	3/ 3
DDD	0/ 0	7/ 7	7/ 7
DDE	0/ 0	7/ 7	7/ 7
DDT	0/ 0	7/ 7	7/ 7
DEF	0/ 0	12/ 12	12/ 12
DNOC	0/ 0	1/ 1	1/ 1
EDB	0/ 0	78/ 81	78/ 81
EPTC	0/ 0	19/ 19	19/ 19
PCNB	0/ 0	13/ 13	13/ 13
PCP	0/ 0	8/ 8	8/ 8
acephate	0/ 0	26/ 26	26/ 26
alachlor	0/ 0	3/ 3	3/ 3
aldicarb	0/ 0	12/ 12	12/ 12
aldrin	0/ 0	6/ 6	6/ 6
atrazine	0/ 0	1/ 1	1/ 1
azinophos-ethyl	0/ 0	5/ 5	5/ 5
azinophos-methyl	0/ 0	32/ 32	32/ 32
benefin	0/ 0	1/ 1	1/ 1
benomyl	0/ 0	35/ 35	35/ 35
bensulide	0/ 0	3/ 3	3/ 3
bromacil	0/ 0	22/ 23	22/ 23

COUNTY: Tulare

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
captan	0/ 0	27/ 27	27/ 27
carbaryl	0/ 0	36/ 36	36/ 36
carbendazim	0/ 0	12/ 12	12/ 12
carbofuran	0/ 0	45/ 45	45/ 45
chlordane	0/ 0	7/ 7	7/ 7
chlordimeform	0/ 0	1/ 1	1/ 1
chloropicrin	0/ 0	33/ 33	33/ 33
chlorothalonil	0/ 0	3/ 3	3/ 3
chlorpropham	0/ 0	1/ 1	1/ 1
chlorpyrifos	0/ 0	26/ 26	26/ 26
creosote	0/ 0	3/ 3	3/ 3
cyanazine	0/ 0	1/ 1	1/ 1
demeton	0/ 0	20/ 20	20/ 20
diazinon	0/ 0	9/ 9	9/ 9
dicamba	0/ 0	3/ 3	3/ 3
dicofol	0/ 0	37/ 37	37/ 37
dieldrin	0/ 0	5/ 5	5/ 5
dimethoate	0/ 0	32/ 32	32/ 32
dinoseb	0/ 0	32/ 32	32/ 32
diphenamid	0/ 0	1/ 1	1/ 1
disulfoton	0/ 0	19/ 19	19/ 19
diuron	9/ 24	35/ 45	44/ 69

COUNTY: Tulare

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endosulfan	0/ 0	31/ 67	31/ 67
endosulfan sulfate	0/ 0	6/ 6	6/ 6
endothall	0/ 0	14/ 14	14/ 14
endrin	0/ 0	17/ 19	17/ 19
endrin aldehyde	0/ 0	5/ 5	5/ 5
ethion	0/ 0	12/ 12	12/ 12
fenamiphos	0/ 0	12/ 12	12/ 12
fluchloralin	0/ 0	3/ 3	3/ 3
heptachlor	0/ 0	7/ 7	7/ 7
heptachlor epoxide	0/ 0	7/ 7	7/ 7
hexachlorobenzene	0/ 0	5/ 5	5/ 5
lindane (gamma-BHC)	0/ 0	20/ 21	20/ 21
malathion	0/ 0	27/ 27	27/ 27
maneb	0/ 0	5/ 5	5/ 5
methamidophos	0/ 0	15/ 15	15/ 15
methomyl	0/ 0	36/ 36	36/ 36
methoxychlor	0/ 0	42/ 44	42/ 44
methyl bromide	0/ 0	99/ 144	99/ 144
methyl parathion	0/ 0	1/ 1	1/ 1
mevinphos	0/ 0	4/ 4	4/ 4
molinate	0/ 0	2/ 2	2/ 2
molinate sulfoxide	0/ 0	2/ 2	2/ 2

COUNTY: Tulare

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
naled	0/ 0	16/ 16	16/ 16
napropamide	0/ 0	3/ 3	3/ 3
oryzalin	0/ 0	11/ 11	11/ 11
oxamyl	0/ 0	26/ 26	26/ 26
paraquat	0/ 0	35/ 35	35/ 35
permethrin (cis and trans)	0/ 0	3/ 4	3/ 4
phorate	0/ 0	19/ 19	19/ 19
phosalone	0/ 0	8/ 8	8/ 8
phosmet	0/ 0	5/ 5	5/ 5
phosphamidon	0/ 0	2/ 2	2/ 2
prometryn	0/ 0	1/ 1	1/ 1
propargite	0/ 0	13/ 13	13/ 13
propham	0/ 0	1/ 1	1/ 1
propyzamide	0/ 0	3/ 3	3/ 3
silvex	0/ 0	15/ 15	15/ 15
simazine	10/ 27	51/ 65	61/ 92
tetradifon	0/ 0	2/ 2	2/ 2
thiobencarb	0/ 0	2/ 2	2/ 2
thiobencarb sulfoxide	0/ 0	2/ 2	2/ 2
toxaphene	0/ 0	28/ 31	28/ 31
trichlorophon	0/ 0	19/ 19	19/ 19

COUNTY: Tulare

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
ziram	0/ 0	9/ 9	9/ 9
zineb	0/ 0	10/ 10	10/ 10
TOTAL SAMPLE RESULTS	312	1927	2239

COUNTY: Tuolumne

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	1/ 1	1/ 1
1,3-D	0/ 0	1/ 1	1/ 1
methyl bromide	0/ 0	1/ 1	1/ 1
TOTAL SAMPLE RESULTS	0	3	3

COUNTY: Ventura

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	37/ 39	37/ 39
1,3-D	0/ 0	45/ 51	45/ 51
2,4-D	0/ 0	39/ 39	39/ 39
BHC (all isomers)	0/ 0	30/ 81	30/ 81
D-D mix	0/ 0	1/ 1	1/ 1

COUNTY: Ventura

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES		
	POSITIVE	NEGATIVE	TOTAL
DBCP	1/ 1	82/ 96	83/ 97
DCPA	0/ 0	11/ 11	11/ 11
DDD	0/ 0	30/ 34	30/ 34
DDE	0/ 0	30/ 34	30/ 34
DDT	0/ 0	30/ 34	30/ 34
DEF	0/ 0	2/ 2	2/ 2
DNOC	0/ 0	31/ 31	31/ 31
EDB	0/ 0	37/ 37	37/ 37
EPTC	0/ 0	6/ 6	6/ 6
MCPA, dimethylamine salt	0/ 0	5/ 5	5/ 5
PCNB	0/ 0	4/ 4	4/ 4
PCP	0/ 0	20/ 20	20/ 20
acephate	0/ 0	36/ 36	36/ 36
acrolein	0/ 0	3/ 5	3/ 5
alachlor	0/ 0	17/ 17	17/ 17
aldicarb	0/ 0	25/ 25	25/ 25
aldrin	0/ 0	30/ 34	30/ 34
atrazine	0/ 0	32/ 32	32/ 32
azinophos-methyl	0/ 0	28/ 28	28/ 28
benefin	0/ 0	2/ 2	2/ 2
benomyl	0/ 0	25/ 25	25/ 25
bromacil	0/ 0	46/ 46	46/ 46

COUNTY: Ventura

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES		
	POSITIVE	NEGATIVE	TOTAL
captan	0/ 0	25/ 25	25/ 25
carbaryl	0/ 0	36/ 36	36/ 36
carbendazim	0/ 0	15/ 15	15/ 15
carbofuran	0/ 0	18/ 18	18/ 18
chlordane	0/ 0	30/ 36	30/ 36
chloropicrin	0/ 0	22/ 22	22/ 22
chlorothalonil	0/ 0	26/ 26	26/ 26
chlorpropham	0/ 0	6/ 6	6/ 6
chlorpyrifos	0/ 0	30/ 30	30/ 30
cyanazine	0/ 0	7/ 7	7/ 7
demeton	0/ 0	14/ 14	14/ 14
diazinon	0/ 0	8/ 8	8/ 8
dicofol	0/ 0	36/ 36	36/ 36
dieldrin	0/ 0	30/ 34	30/ 34
dimethoate	0/ 0	37/ 37	37/ 37
dinoseb	0/ 0	30/ 30	30/ 30
diphenamid	0/ 0	21/ 21	21/ 21
disulfoton	0/ 0	36/ 36	36/ 36
diuron	0/ 0	46/ 46	46/ 46
endosulfan	0/ 0	46/ 107	46/ 107
endosulfan sulfate	0/ 0	41/ 55	41/ 55
endothall	0/ 0	13/ 13	13/ 13

COUNTY: Ventura

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
endrin	0/ 0	30/ 42	30/ 42
endrin aldehyde	0/ 0	30/ 34	30/ 34
ethion	0/ 0	8/ 8	8/ 8
fenamiphos	0/ 0	25/ 25	25/ 25
heptachlor	0/ 0	30/ 36	30/ 36
heptachlor epoxide	0/ 0	30/ 34	30/ 34
hexachlorobenzene	0/ 0	20/ 20	20/ 20
lindane (gamma-BHC)	0/ 0	36/ 52	36/ 52
malathion	0/ 0	8/ 8	8/ 8
maneb	0/ 0	25/ 25	25/ 25
methamidophos	0/ 0	30/ 30	30/ 30
methomyl	0/ 0	31/ 31	31/ 31
methoxychlor	0/ 0	37/ 37	37/ 37
methyl bromide	0/ 0	44/ 57	44/ 57
methyl parathion	0/ 0	8/ 8	8/ 8
mevinphos	0/ 0	8/ 8	8/ 8
oxamyl	0/ 0	24/ 24	24/ 24
paraquat	0/ 0	30/ 30	30/ 30
parathion	0/ 0	3/ 3	3/ 3
phorate	0/ 0	25/ 25	25/ 25
prometryn	0/ 0	32/ 32	32/ 32
propargite	0/ 0	8/ 8	8/ 8

COUNTY: Ventura

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
propham	0/ 0	6/ 6	6/ 6
propyzamide	0/ 0	8/ 8	8/ 8
silvex	0/ 0	14/ 14	14/ 14
simazine	0/ 0	43/ 43	43/ 43
toxaphene	0/ 0	40/ 56	40/ 56
trichlorophon	0/ 0	8/ 8	8/ 8
ziram	0/ 0	25/ 25	25/ 25
TOTAL SAMPLE RESULTS	1	2170	2171

COUNTY: Yolo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	33/ 44	33/ 44
1,3-D	0/ 0	36/ 50	36/ 50
2,4,5-T	0/ 0	1/ 2	1/ 2
2,4-D	0/ 0	32/ 33	32/ 33
4-CLOC	0/ 0	1/ 1	1/ 1
BHC (all isomers)	0/ 0	8/ 15	8/ 15
D-D mix	0/ 0	1/ 1	1/ 1
DBCP	0/ 0	52/ 52	52/ 52

COUNTY: Yolo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
DDD	0/ 0	8/ 8	8/ 8
DDE	0/ 0	8/ 8	8/ 8
DDT	0/ 0	8/ 8	8/ 8
EDB	1/ 4	77/ 80	78/ 84
MCPA, dimethylamine salt	0/ 0	1/ 1	1/ 1
PCP	0/ 0	8/ 8	8/ 8
alachlor	1/ 1	27/ 27	28/ 28
aldicarb	0/ 0	18/ 18	18/ 18
aldrin	0/ 0	8/ 8	8/ 8
atrazine	0/ 0	20/ 20	20/ 20
azinophos-methyl	0/ 0	9/ 9	9/ 9
benomyl	0/ 0	20/ 20	20/ 20
bromacil	0/ 0	19/ 19	19/ 19
captan	0/ 0	20/ 20	20/ 20
carbaryl	0/ 0	18/ 18	18/ 18
carbendazim	0/ 0	17/ 17	17/ 17
carbofuran	0/ 0	11/ 11	11/ 11
chlordane	0/ 0	8/ 8	8/ 8
chloropicrin	0/ 0	17/ 17	17/ 17
chlorothalonil	0/ 0	18/ 18	18/ 18
chlorpyrifos	0/ 0	1/ 1	1/ 1
cyanazine	0/ 0	19/ 19	19/ 19

COUNTY: Yolo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
demeton	0/ 0	30/ 30	30/ 30
dicofol	0/ 0	18/ 18	18/ 18
dieldrin	0/ 0	8/ 8	8/ 8
dimethoate	0/ 0	14/ 14	14/ 14
dinoseb	0/ 0	20/ 20	20/ 20
diphenamid	0/ 0	1/ 1	1/ 1
disulfoton	0/ 0	46/ 46	46/ 46
endosulfan	0/ 0	22/ 51	22/ 51
endosulfan sulfate	0/ 0	8/ 8	8/ 8
endrin	0/ 0	35/ 38	35/ 38
endrin aldehyde	0/ 0	7/ 7	7/ 7
glyphosate	0/ 0	1/ 2	1/ 2
heptachlor	0/ 0	8/ 8	8/ 8
heptachlor epoxide	0/ 0	8/ 8	8/ 8
hexachlorobenzene	0/ 0	7/ 7	7/ 7
lindane (gamma-BHC)	0/ 0	35/ 38	35/ 38
malaoxon	0/ 0	1/ 1	1/ 1
malathion	0/ 0	1/ 1	1/ 1
methomyl	0/ 0	19/ 19	19/ 19
methoxychlor	0/ 0	18/ 18	18/ 18
methyl bromide	0/ 0	21/ 28	21/ 28
metolachlor	0/ 0	7/ 7	7/ 7

COUNTY: Yolo

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
molinate	1/ 5	18/ 26	19/ 31
molinate sulfoxide	0/ 0	19/ 27	19/ 27
paraquat	0/ 0	20/ 20	20/ 20
phorate	0/ 0	19/ 19	19/ 19
screen (carbamate)	0/ 0	28/ 28	28/ 28
screen (chlorinated hydrocarb)	0/ 0	30/ 32	30/ 32
screen (organophosphate)	0/ 0	28/ 29	28/ 29
screen (triazine)	0/ 0	1/ 1	1/ 1
silvex	0/ 0	31/ 31	31/ 31
simazine	0/ 0	20/ 20	20/ 20
thiobencarb	0/ 0	14/ 20	14/ 20
thiobencarb sulfoxide	0/ 0	14/ 17	14/ 17
toxaphene	0/ 0	35/ 39	35/ 39
ziram	0/ 0	2/ 2	2/ 2
TOTAL SAMPLE RESULTS	10	1250	1260

COUNTY: Yuba

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
1,2-D	0/ 0	19/ 19	19/ 19
1,3-D	0/ 0	19/ 19	19/ 19

COUNTY: Yuba

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES POSITIVE	NEGATIVE	TOTAL
2,4-D	0/ 0	8/ 8	8/ 8
BHC (all isomers)	0/ 0	2/ 4	2/ 4
DDD	0/ 0	2/ 2	2/ 2
DDE	0/ 0	2/ 2	2/ 2
DDT	0/ 0	2/ 2	2/ 2
MCPA, dimethylamine salt	0/ 0	4/ 4	4/ 4
PCP	0/ 0	9/ 9	9/ 9
aldrin	0/ 0	2/ 2	2/ 2
azinophos-methyl	0/ 0	8/ 8	8/ 8
benomyl	0/ 0	8/ 8	8/ 8
captan	0/ 0	9/ 9	9/ 9
carbaryl	0/ 0	3/ 3	3/ 3
carbofuran	0/ 0	8/ 8	8/ 8
chlordane	0/ 0	2/ 2	2/ 2
demeton	0/ 0	10/ 10	10/ 10
dieldrin	0/ 0	2/ 2	2/ 2
endosulfan	0/ 0	2/ 4	2/ 4
endosulfan sulfate	0/ 0	2/ 2	2/ 2
endrin	0/ 0	10/ 12	10/ 12
endrin aldehyde	0/ 0	2/ 2	2/ 2
heptachlor	0/ 0	2/ 2	2/ 2
heptachlor epoxide	0/ 0	2/ 2	2/ 2

COUNTY: Yuba

PESTICIDE NAME	NO. OF WELLS / NO. OF SAMPLES		
	POSITIVE	NEGATIVE	TOTAL
hexachlorobenzene	0/ 0	3/ 3	3/ 3
lindane (gamma-BHC)	0/ 0	10/ 12	10/ 12
methyl bromide	0/ 0	19/ 19	19/ 19
molinate	0/ 0	11/ 11	11/ 11
molinate sulfoxide	0/ 0	6/ 6	6/ 6
silvex	0/ 0	10/ 10	10/ 10
thiobencarb	0/ 0	6/ 6	6/ 6
thiobencarb sulfoxide	0/ 0	5/ 5	5/ 5
toxaphene	0/ 0	10/ 12	10/ 12
ziram	0/ 0	8/ 8	8/ 8
TOTAL SAMPLE RESULTS	0	237	237