SAMPLING FOR PESTICIDE RESIDUES IN CALIFORNIA WELL WATER

1990 UPDATE
WELL INVENTORY DATA BASE

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

PURSUANT TO
THE PESTICIDE CONTAMINATION PREVENTION ACT

December 1, 1990

Environmental Hazards Assessment Program

STATE OF CALIFORNIA
Department of Food and Agriculture
Division of Pest Management, Environmental Protection and Worker Safety
Environmental Monitoring and Pest Management Branch
1220 N Street, Sacramento, California 95814

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by

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December 1, 1990

ENVIRONMENTAL HAZARDS ASSESSMENT PROGRAM

EXECUTIVE SUMMARY

PURPOSE:

Assembly Bill 2021, the Pesticide Contamination Prevention Act (PCPA), requires that the Director of the Department of Food and Agriculture (CDFA) maintain a statewide data base of wells sampled for pesticide active ingredients and that agencies submit to the Director the results of any well sampling for pesticide active ingredients. The PCPA directs the CDFA, in consultation with the California Department of Health Services (CDHS) and the State Water Resources Control Board (SWRCB), to annually report: (1) specified information contained in the data base to the Legislature, the CDHS, and the SWRCB, (2) actions taken by the Director and the SWRCB to prevent pesticides from leaching to ground water, and (3) factors contributing to the movement of pesticides to ground water.

BACKGROUND:

The well inventory data base was developed by the CDFA's Environmental Hazards Assessment Program in 1983, prior to the enactment of the PCPA on January 1, 1986. The purposes of the data base were to allow the CDFA to: (1) identify reliable information on the occurrence of nonpoint-source contamination of ground water by the agricultural use of pesticides and (2) computerize the data to facilitate subsequent graphical, numerical, and spatial analyses. At that time, the data base included only those results of sampling for pesticides in well water suspected of originating from agricultural non-point sources. To meet the requirements of the PCPA, both point (well-defined areas where pollutants are concentrated) and non-point source sampling results are now included in the data base, although the majority of data submitted are still from agricultural non-point sources.

The 1990 update report is the fourth update to the first annual report and summarizes seven agencies' well sampling results. Although the data were submitted to the CDFA between July 1, 1989 and June 30, 1990, the majority of results are for sampling studies conducted in 1987, 1988, and 1989. In

all, 29,923 new records were added to the well inventory data base for the 1990 summary year. Currently, over half the records in the data base are for well water samples taken in 1986 or later. Numerical highlights from all five well inventory reports are presented in Table 1.

Interpretation of sampling results in the well inventory data base are subject to the following limitations:

1. Only data submitted to the CDFA between July 1, 1989 and June 30, 1990 are included and discussed in this report.

2. The data included in this report are not the results of a single study. Rather, they are the results of 38 studies, designed and conducted by seven agencies for varying purposes.

3. Pesticide residue detections in the well inventory do not represent a complete survey of ground water contamination in the state. The pesticides detected are limited to those for which the sample was specifically analyzed. Therefore, the data indicate which pesticides are present in California well water among those pesticides for which analyses were carried out, but not among all pesticides used statewide.

4. Sampling by agencies other than the CDFA is not necessarily related to suspected agricultural non-point sources of contamination. Consequently, it should not be assumed that the submitted results are an indication of which pesticides are more or less likely to leach to ground water as a result of legal agricultural use.

METHODS:

Sampling results were evaluated to determine if they met the following criteria for inclusion in the well inventory data base:

1. Sampling results were for the analyses of pesticides or pesticide breakdown products.

2. The samples were taken from ground water (i.e., from a well).

3. Samples were taken as close to the well head as possible.

4. Samples had to be obtained from an untreated and unfiltered system.

Table 1. Numerical highlights contained in the well inventory data base, by year of report.

NUMERICAL HIGHLIGHTS	REPORT YEAR					CUMULATIVE TOTAL
	1986[a]	1987[b]	1988[b]	1989[b]	1990[b]	
Total Analyses	71,109	4,108	39,780	8,096	29,923	144,920
Positive Analyses	5,110	987	336	620	717	7,150
Wells sampled	8,359	524	2,963	749	2,761	13,778[c]
Wells with positive analyses	2,297	179	116	180	163	2,794[c]
Counties sampled	53	18	41	33	52	57[c]
Counties with positive analyses	23	11	14	20	15	32[c]
Pesticides and related compounds sampled	161	77	168	97	192	257[c]
Pesticides and related compounds detected	15	14	10	14	14	32[c]
Pesticide residues resulting from non-point source agricultural use	9	8	1	7	6	12[c]

a The 1986 report included confirmed, non-confirmed and negative detections in the number of wells and counties sampled.

b The number of wells and counties sampled are compiled from confirmed (i.e., two or more positive samples per chemical and well in a single study) and negative analyses only. Non-confirmed positives (i.e., single detections not confirmed by subsequent analyses in a single study) are not included.

c The cumulative total is not additive (e.g., a well with positive analyses reported in the 1986 report with additional positive analyses reported in the 1989 report will only be counted once).

5. Location of each sampled well had to be identified by at least township/range/section according to the U.S. Geological Survey's Public Lands Survey Coordinate system.

6. The data must not have been entered into the well inventory previously.

The data were then coded onto appropriate forms and transferred into a computer. Hard copies of the data were proofread against the coding sheets and edited as necessary. The data were further verified and edited and finally entered into the permanent well inventory data base where summary results tables were generated.

MAJOR FINDINGS:

The results of 29,923 analyses of well water samples were submitted to the CDFA for the 1990 report. The samples were taken from 2,761 wells in 52 counties and analyzed for an overall total of 192 pesticide active ingredients and breakdown products. Pesticide residues were detected and confirmed in 163 wells (6%) in 15 counties. Of those 163 wells, 73 (48%) were positive for pesticides no longer registered for use in California. Of the 192 compounds analyzed for, 14 were detected and confirmed in well water. (For the purposes of the well inventory data base, confirmed detections are detections of a particular pesticide residue in two or more discrete samples taken from the same well during the time period of a single monitoring study.) The CDFA has determined that six of the 14 were present in ground water as a result of agricultural use. These six chemicals are aldicarb sulfone and aldicarb sulfoxide (breakdown products of aldicarb), atrazine, bromacil, diuron, and simazine. Aldicarb sulfone and aldicarb sulfoxide were detected in Del Norte County where aldicarb is no longer registered for use. The use of atrazine, bromacil, diuron, and simazine will be modified in areas where they were detected and determined to be present as a result of agricultural use. Of the remaining eight detected pesticides, six (DBCP, propylene dichloride [1,2-D], ethylene dibromide [EDB], toxaphene, ortho-dichlorobenzene, and monuron) are no longer registered for agricultural use in California; therefore no action was taken by the CDFA in response to these detections. The other two compounds

detected were prometon and carbon disulfide. The CDFA determined that the presence of prometon in three wells was not due to agricultural use; the remaining two wells with prometon detections are still under investigation. The carbon disulfide detection is also still under investigation.

The CDFA has taken the following actions between July 1, 1989 and June 30, 1990 to prevent pesticide contamination of ground water:

1. Proposed and adopted regulations to revise the specific numerical values used to identify pesticides with the potential to leach to ground water.

2. Adopted regulations that added 15 pesticides to the Groundwater Protection List.

3. Adopted regulations that established PMZs for simazine, bromacil, diuron, and prometon.

4. Adopted regulations that established use requirements for pesticides that contain simazine, bromacil, diuron, and prometon within their respective PMZs.

5. Adopted regulations that provide for research authorizations for the application of leaching pesticides within their PMZs for purposes of research and experimentation.

6. Adopted regulations that defined "ground water protection advisories", specified what information they shall include, and described the requirements for licensed agricultural pest control advisers when writing such an advisory.

7. Adopted regulations that changed the ground water protection restrictions to require the submission of a written ground water protection advisory in order to obtain a permit to use a leaching pesticide within its PMZ.

Actions taken by the SWRCB in 1990 to prevent pesticides from entering ground water included:

1. Served with the CDFA and the CDHS on an interagency committee, established under the PCPA, to make findings on the rice herbicide, bentazon, which has been detected in wells in rice-growing counties. The committee agreed unanimously to recommend to the CDFA director that use of bentazon on rice be cancelled, but that minor uses on other crops be permitted in cases of urgent need under certain conditions of water management and monitoring.

2. Had approved by the U.S. Environmental Protection Agency (EPA) the State Board Quality Assurance Program Plan which outlines the procedures to be used by the State and Regional Boards to consistently produce quality environmental measurement data.

3. Regional Boards responded to spills, complaints and enforcements that relate to preventing pesticide pollution of ground water.

CONCLUSIONS:

Of the 192 pesticide active ingredients and related chemicals tested for, 14 (7%) were detected in well water. Six of the pesticides detected are no longer registered for use in California. The CDFA has determined that six (aldicarb sulfone, aldicarb sulfoxide, atrazine, bromacil, diuron, and simazine) of the 14 pesticides detected were present as a result of agriculturally applied pesticides leaching through soil to ground water.

Between July 1, 1989 and June 30, 1990, 29,923 analyses of well water samples were reported to the CDFA. These samples were taken from 2,761 wells in 52 counties. Most of the wells were sampled in 1987, 1988, and 1989. Pesticides were detected in 163 wells in 15 counties. Of the 163 positive wells reported, 73 (48%) were positive for pesticides no longer registered for use in California.

PREFACE

This report fulfills the requirements contained in section 13152, subdivision (e) of the Food and Agricultural Code, directing 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) annually by December 1.

This report is the fourth update of the first annual report (Brown, et al., 1986) which summarized results of well water sampling for agricultural pesticide residues from samples taken from 1975 to 1986. The first update (Ames, et al., 1987) summarized data submitted to the CDFA between September 1, 1986 and August 31, 1987. The second update (Cardozo et al., 1988) summarized data submitted between September 1, 1987 and June 30, 1988. The third update (Cardozo, et al., 1989) summarized data submitted between July 1, 1988 and June 30, 1989.

Locations of sampling results are summarized in this report by county. In the data base, results are specified by state well number, if available. The state well number signifies township, range, and section of the well sampled, locating it within one square-mile units. However, due to the number of records contained in the data base for this year's report (29,923) a listing of individual results by township, range, and section is not possible here.

The information in this report is presented in four parts; Parts I, II, and III were written by the CDFA, and Part IV by the SWRCB.

ACKNOWLEDGEMENTS

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In addition, we acknowledge the contributions made by staff of cooperating federal, state, and local agencies. In particular, we thank Dave Storm, Dawn Lieginger, and Mike Melavic of the California Department of Health Services (CDHS) for their assistance in transferring computer files containing AB 1803 sampling data for agricultural-use pesticides from the CDHS to the well inventory data base.

Finally, we thank the many individuals who, by contributing their data, time, and effort, made this data base and report possible.

DISCLAIMER

The mention of commercial products, their source or their use in connection with material reported herein is not to be construed as either an actual or implied endorsement of such product.

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I. WELL INVENTORY DATA BASE

A. INTRODUCTION

The Pesticide Contamination Prevention Act (PCPA; see Appendix A, p. 71) added sections 13141 through 13152 to Division 7 of the Food and Agricultural Code and requires the California Department of Food and Agriculture (CDFA) to maintain a statewide data base of results of well sampling for pesticide active ingredients. The PCPA also requires all government agencies to submit results of any such well sampling to the CDFA, which annually reports the quantity and locations of wells sampled and the number of wells with detectable levels of pesticides to the Legislature, the State Water Resources Control Board (SWRCB), and the California Department of Health Services (CDHS).

This is the fifth annual report and the fourth update of the 1986 report entitled Sampling for Pesticide Residues in California Well Water, 1986 Well Inventory Data Base (Brown, et.al., 1986). Results are presented in this 1990 report for the number of wells sampled and the number of wells in which pesticide residues were detected for each county. Although the data were submitted between July 1, 1989 and June 30, 1990, the majority of results are for sampling studies conducted in 1987, 1988, and 1989.

The well inventory data base was originally developed by the CDFA's Environmental Hazards Assessment Program (EHAP) in the winter of 1983, prior to the enactment of the PCPA (Cardozo, et al., 1985). The purposes of the data base were to allow the CDFA to: (1) identify reliable information on the occurrence of nonpoint-source contamination of ground water by the agricultural use of pesticides; and (2) computerize the data to facilitate subsequent graphical, numerical, and spatial analyses. At that time, the data base included only those results of sampling for pesticides in well water suspected of originating from agricultural non-point sources. To meet the requirements of the PCPA, both point and non-point source sampling results are now included in the data base, although the majority of data submitted are still from agricultural non-point sources.

B. MATERIALS AND METHODS

Data Collection:

Section 13152, subdivision (c) of the PCPA, requires all agencies that sample wells for pesticides to submit their sampling data and analytical results to the CDFA for inclusion in the Well Inventory Data Base. The CDFA has notified appropriate agencies of this law and requested them to submit required data on a CDFA reporting form, on a form of their own, or on magnetic tape.

The PCPA also requires that the CDFA, SWRCB, and CDHS jointly agree on minimum well sampling requirements for all results submitted to the CDFA. The agencies agreed upon the following minimum reporting requirements which became effective on December 1, 1986, and are applicable only to well samples taken after that date:

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.
6. Minimum detectable limit, in parts per billion.
7. Sampling agency.
8. Analyzing laboratory.
9. Street address of well location.
10. Well type.
11. Sample type (e.g., initial or confirmation).

Optional information to be included when available:

1. Method of analysis.
2. Well depth (in feet).
3. Depths of top and bottom perforations 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 a driller's log was located.
7. Known or suspected source of contamination.

Data collection required a significant amount of interagency cooperation. Agencies supplied well sampling data as published reports, raw laboratory results, or retrievals of information on floppy disks or magnetic tape from their data bases.

Data Evaluation:

Sampling results were evaluated to determine if they met the following criteria for inclusion in the well inventory data base:

1. Sampling results were for the analyses of pesticides or pesticide breakdown products (e.g., aldicarb sulfoxide).
2. The samples were taken from ground water (i.e., from a well).
3. Samples were taken as close to the well head as possible.
4. Samples had to be obtained from an untreated and unfiltered system since treatment or filtration could mask the presence of a chemical in ground water.
5. Location of each sampled well had to be identified by at least township/range/section according to the U.S. Geological Survey's Public Lands Survey Coordinate system. This requirement was necessary to count the number of individual wells in the data base, as well as to evaluate ground water contamination by pesticides using other spatially-distributed data sets.
6. The data must not have been entered previously.

Published reports were evaluated to determine if the data met the criteria or, in the case of unpublished laboratory results, verbal confirmation was requested from appropriate agency staff. Data received on floppy disks or magnetic tape were transferred to a computer and a hard copy made which was then evaluated. Data that met the criteria were coded, keypunched, and transferred into the Well Inventory Data Base.

According to the minimum reporting requirements, a positive well sample must be identified as an initial or confirmation sample. In order to further increase the integrity and usefulness of the data in the well inventory,

"confirmed" detections were distinguished from "unconfirmed" detections. For the purposes of the Well Inventory Data Base, confirmed detections are detections of a particular pesticide residue in two or more discrete samples taken from the same well during the time period of a single monitoring study; negative results are samples in which pesticide residues were not detected. Unconfirmed detections are results for which a particular pesticide was detected in only one sample from a particular well because either no other samples were taken, or no other subsequent samples in that study contained detectable residues for that well. The criteria outlined in "Analytical Methods for Verification of Ground Water Contamination by Pesticides" (Appendix B, p. 84) were used for determining whether a positive sample was coded as confirmed or unconfirmed.

Format of the Data Base:

Each chemical analysis of a well water sample for a pesticide residue or related chemical constitutes one record in the data base. Each record may contain up to 149 columns of data. The data base format is explained in Appendix C, p. 88.

Data Entry:

The data were coded onto appropriate forms, keypunched onto floppy disks at the Franchise Tax Board, and then transferred to a PC microcomputer at the CDFA. Hard copies of the data were proofread against the coding sheets and edited as necessary. The data were then transferred to a SUN computer (3/280 model), checked with computer verification programs, and entered into the permanent Well Inventory Data Base, where summary tables were generated. Codes used in the data base are listed in Appendix D, p. 92.

Data Verification:

The following computer-driven verification programs have been developed by the CDFA staff to test the accuracy of new data before inclusion in the permanent data base:

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, such as an incorrect township for a county, were noted and corrected.
2. Column verification:
   This program tested the validity of the data by comparing allowed values for each column to the actual values entered. For example, chemical codes must be acceptable to the program or they will be rejected as errors. Codes rejected by the program were inspected and corrected.

C. RESULTS AND DISCUSSION

The following agencies submitted well sampling results from 38 studies to the CDFA between July 1, 1989 and June 30, 1990:

Federal: The U.S. Environmental Protection Agency (EPA)

State: The CDFA, CDHS, DWR, and North Coast (NCRWQCB) and Central Coast (CCRWQCB) Regional Water Quality Control Boards

County: The Kern and Sacramento County Health Departments (KCHD and SCHD)

The results submitted by the agencies listed above are presented in two sections: (1) Confirmed detections and negative results; and (2) Unconfirmed detections. For the purposes of the Well Inventory Data Base, confirmed detections are detections of a particular pesticide residue in two or more discrete samples taken from the same well during the time period of a single monitoring study; negative results are the analyses of well water samples in which pesticide residues were not detected. Unconfirmed detections are results for which a particular pesticide was detected in only one sample from a particular well, because either no other samples were taken, or no other subsequent samples in that study contained detectable residues for that well. Confirmed detections were distinguished from unconfirmed detections to increase the integrity of the data presented. Only those detections that are verified according to the standards set by the CDFA (Appendix B, p. 84) will be subject to regulatory action by the Director to prevent further ground water contamination by those pesticides (Food & Agr. Code, §13149, subd. (d)).

The results are summarized by pesticide active ingredient and breakdown product (showing which pesticides were analyzed for and which were detected) and by county (indicating where sampling and detections occurred). Appendix E, p. 105 is a summary of well studies with results included in the 1990 update report.

SECTION I. CONFIRMED DETECTIONS AND NEGATIVE RESULTS

Included in the 1990 update is information on 168 pesticide active ingredients and 24 breakdown products analyzed in 29,923 samples taken from 2,761 wells in 52 counties. Information about each pesticide detected is presented in the section on the Status of Detected Pesticides (pp. 13 to 20). Tables of the sampling results by county and pesticide are presented in Appendix F, p. 110. A summary of the numerical highlights from each of the previous well inventory reports, plus cumulative totals, is presented in Table 1, p. 111. The active ingredients and breakdown products detected, their sources and status, are summarized in Table 2, p. 112.

RESULTS BY PESTICIDE OR BREAKDOWN PRODUCT:

Detections

Of the 192 active ingredients and breakdown products analyzed for overall, fourteen (7%) were detected in well water, while 178 (93%) were not detected. The fourteen compounds found were: aldicarb sulfone, aldicarb sulfoxide, atrazine, bromacil, carbon disulfide, dibromochloropropane (DBCP), ortho-dichlorobenzene, diuron, ethylene dibromide (EDB), monuron, prometon, propylene dichloride (1,2-D), simazine, and toxaphene. Of these, aldicarb sulfone and aldicarb sulfoxide (breakdown products of aldicarb), atrazine, bromacil, diuron, and simazine were determined to be present in wells as a result of their agricultural use. All of these detections have been reviewed through the Pesticide Detection Response Process (PRDP) as required by the PCPA.

Six of the fourteen active ingredients detected (DBCP, ortho-dichlorobenzene, EDB, monuron, 1,2-D, and toxaphene) are no longer registered for agricultural use in California, and are therefore exempt from the reviewing requirements of the PCPA. Monuron is currently registered, for home use only, as an aquarium algicide.

Of the remaining detected compounds, the carbon disulfide detection is currently under investigation by the CDFA, and the detection of prometon was determined by the CDFA to not be due to agricultural use in three wells and is still under investigation in two wells.

Pesticide residues were detected in a total of 716 analyses of well water samples taken from 163 wells. Simazine, the most frequently detected pesticide, accounted for 29% of the positive analyses. DBCP, the second most-frequently detected pesticide, accounted for 26% of the positive analyses. Together, simazine, DBCP, and diuron accounted for 73% of the total positive analyses. The statewide distribution of detected pesticides is shown in Figure 1, p. 11.

The numbers of positive and total wells, analyses, and counties for each detected pesticide are shown in Table 5, p. 135. As shown in the table, there was no relationship between the number of analyses and the frequency of detection of a particular pesticide in wells or counties.

RESULTS BY COUNTY:

Total Number of Analyses

Well sampling results from 2,761 wells in 52 counties are included in the 1990 report-year additions to the data base. The results of sampling in those counties, including the number of positive, negative, and total analyses taken and wells sampled, are presented in Table 6, p. 136. As shown in the table, Kern County had the largest number of wells sampled (316 or 11% of all wells sampled), followed by Tulare County (278 wells), and Monterey County (259 wells). Sampling in nine counties (Fresno, Kern, Monterey, Riverside, Sacramento, San Bernardino, Sonoma, Tulare, and Ventura) accounted for 58% of all analyses and 55% of all wells sampled.

The number of pesticides sampled for and the number of analyses for each pesticide also varied among counties. For example, wells in four counties (Los Angeles, Monterey, Orange, and Santa Clara) were analyzed for the

largest number of pesticides (140, 105, 109, and 106, respectively), while wells in 12 counties were analyzed for ten or fewer pesticides. This variation is attributable not only to differences in pesticide use among counties, but also to differences in the design of well sampling programs of various agencies. A tabular summary of pesticides analyzed for in each county appears in Appendix G, p. 143.

Detections

The fourteen pesticide residues were detected in wells in 15 of the 52 (29%) counties where wells were sampled. The fumigant 1,2-D was detected in seven counties. Simazine and diuron were each detected in wells in six counties. Atrazine was detected in five counties, DBCP in four counties, and bromacil and prometon were each detected in three counties. The remaining seven pesticides, aldicarb sulfone, aldicarb sulfoxide, carbon disulfide, ortho-dichlorobenzene, EDB, monuron, and toxaphene were each found in a single county. The number of pesticides detected and the total number of pesticides tested for in each county is listed in Table 7, p. 139.

The number of pesticides detected in any one county ranged from one to eight. Tulare County had the largest number of pesticides detected with eight confirmed finds, followed by Fresno County with six. Glenn, Kern, and Stanislaus Counties each had four pesticides detected. Three pesticides were detected in Tehama County. The remaining six counties with detections each had one pesticide detected in ground water.

The number of wells with pesticide residues in the fifteen counties ranged from one to 56. Tulare County had the largest number of wells with pesticide residues (56), followed by Kern and Fresno Counties with 35 and 32, respectively. The remaining twelve counties had one to nine wells containing pesticide residues. A summary of the number of wells with detected pesticide residues by county and pesticide is shown in Table 8, p. 141. Figure 2, p. 12 indicates the townships within each county in California where one or more pesticides were detected in well water.

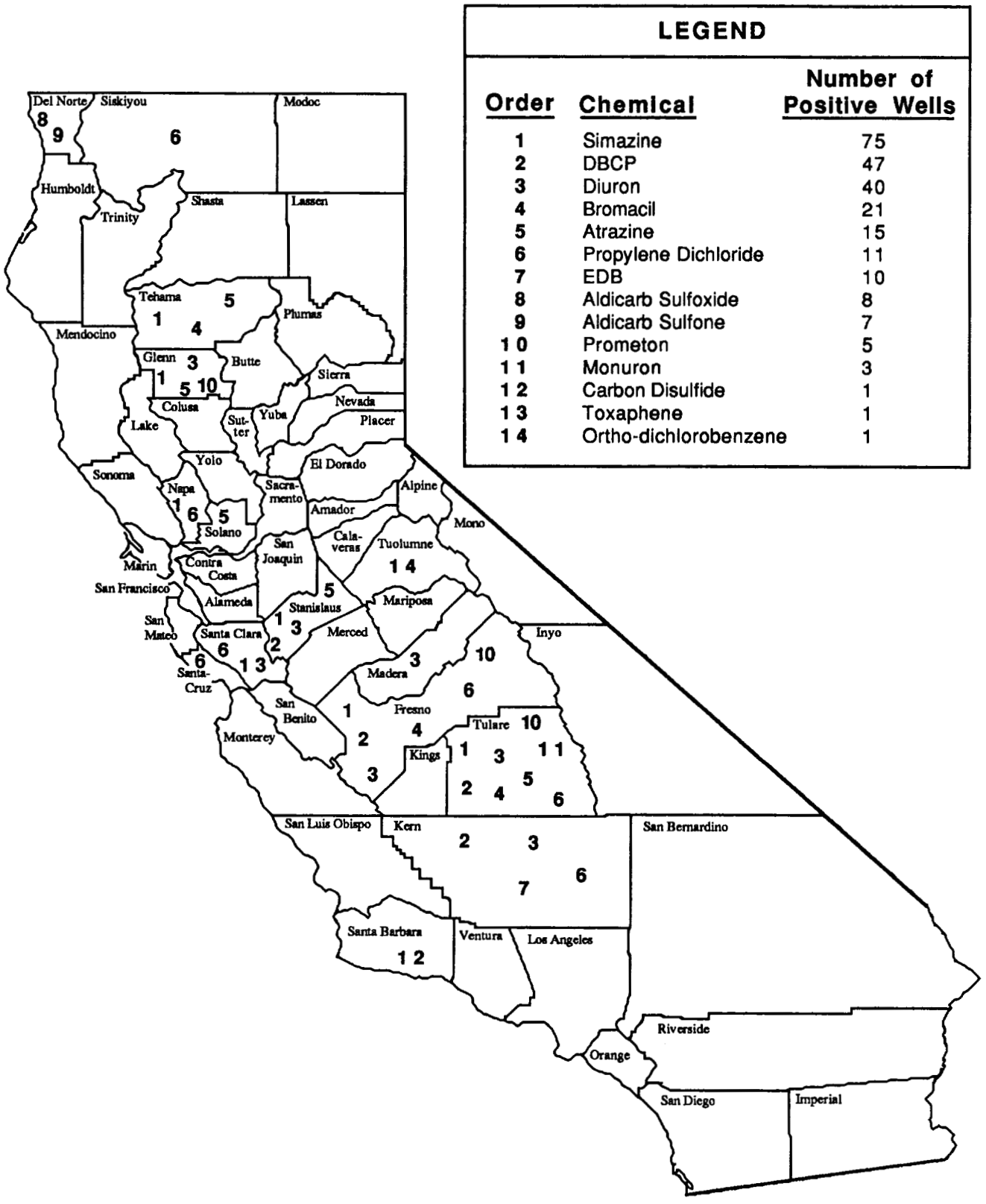

Figure 1. California counties where pesticides were detected in well water. Results are from sampling reported between July 1989 and June 1990.

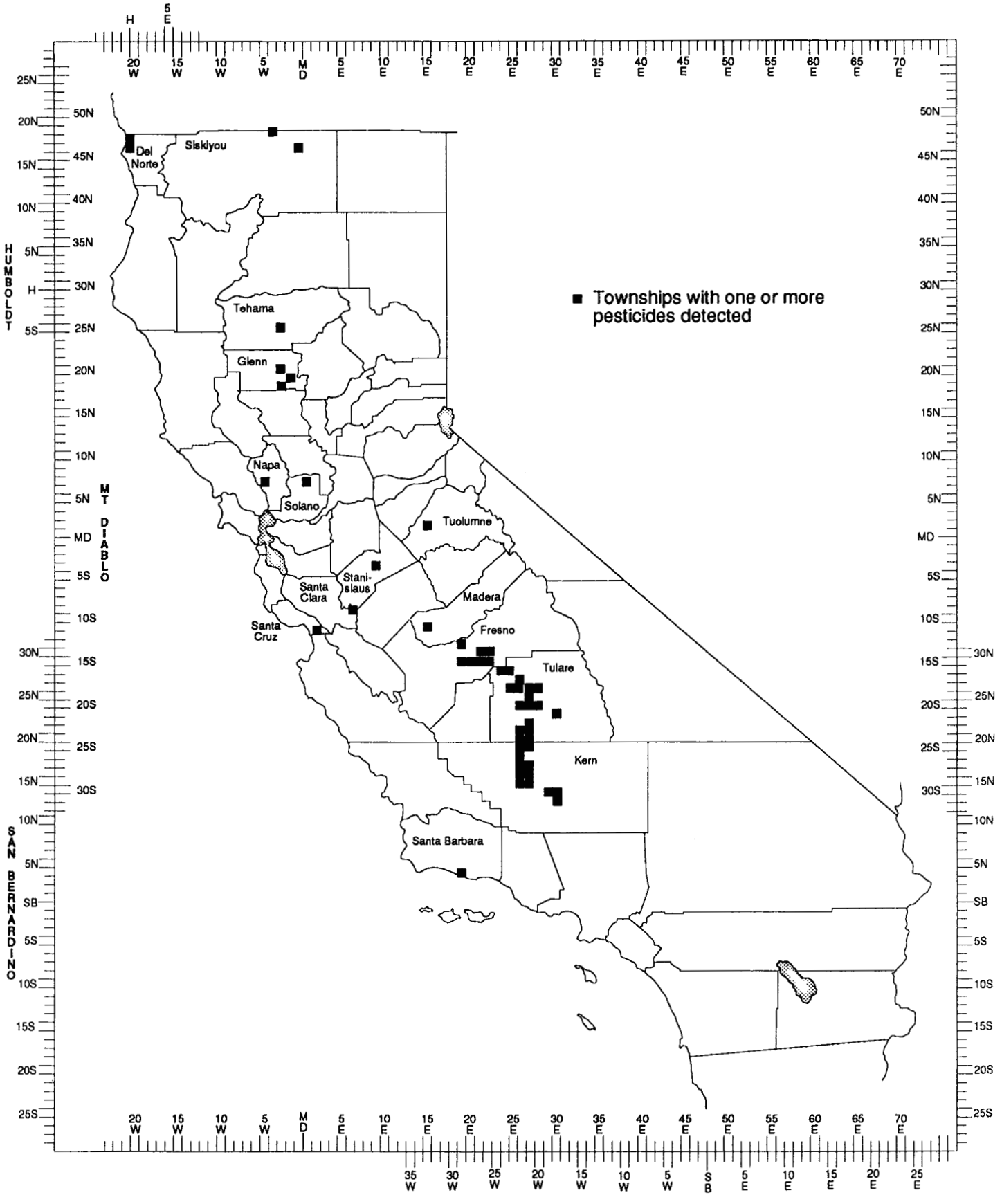

Figure 2. California townships with one or more pesticides detected in well water. Results are from sampling reported between July 1989 and June 1990.

STATUS OF DETECTED PESTICIDES IN THE 1990 UPDATE TO THE DATA BASE:

(1) Simazine:

The detection of the herbicide simazine was confirmed in 75 wells in six counties out of 1,192 wells sampled in 46 counties. Simazine is primarily used in California to control weeds in citrus orchards and a variety of other crops and on rights-of-way. Concentrations of residues ranged from 0.10 to 3.30 ppb. The CDHS has set an MCL for simazine of 10.00 ppb.

In Tulare County, 38 wells were found to contain residues of simazine. In Fresno County, 27 wells tested positive for simazine. Stanislaus County had five positive wells, Glenn and Tehama Counties had two positives wells each, and Napa County had one well found to be contaminated with simazine residues. All of the positive wells, except for the well in Napa County, were sampled by the CDFA as part of monitoring programs for PMZs. The Napa County well, initially tested by the CDHS under the AB 1803 monitoring program, was also investigated by the CDFA along with five other wells in that section. The CDFA recommended that the section containing the contaminated well not be declared a PMZ for simazine because its presence was not detected in any of the wells sampled in the follow-up investigation.

Simazine has been previously reviewed through the PDRP, resulting in regulations, effective April 1990, that prohibit the use of pesticides containing simazine in non-crop areas within simazine PMZs. Following the investigations, the Department recommended that 16 sections in Fresno County, one section in Glenn County, four sections in Stanislaus County, one section in Tehama County, and 19 sections in Tulare County be made PMZs for simazine. Two detections, one in Fresno County and one in Tehama County, are still under investigation.

(2) **DBCP:**

Although the nematicide DBCP was suspended from use in 1977, DBCP residues are still being detected in ground water. The detection of DBCP was confirmed in 48 wells located in four counties, out of 683 wells sampled in 18 counties. Concentrations of residues detected ranged from 0.02 to 6.20 ppb. The CDHS has set an AL for DBCP of 1.00 ppb.

Confirmed detections of DBCP were found in 32 wells in Kern County, 12 wells in Tulare County, three wells in Fresno County, and one well in Stanislaus County. The Kern County wells were sampled by the Kern County Environmental Health Department as part of their routine monitoring. The wells in Fresno, Stanislaus, and Tulare Counties were sampled by the CDHS as part of their AB 1803 sampling program.

Historical agricultural use of DBCP is considered to be the source of DBCP residues. Because DBCP is no longer registered for use in California, it has not been reviewed under the PDRP.

(3) **Diuron:**

The detection of the herbicide diuron was confirmed in 40 wells in six counties out of 782 wells sampled in 34 counties. Weed control on rights-of-way accounted for over one-third of diuron use in California. Concentrations of residues detected ranged from 0.06 to 3.95 ppb. A CDHS MCL or AL for diuron has not been established. The EPA has, however, set a Lifetime HAL of 10.0 ppb for diuron.

Tulare County accounted for 78% of diuron detections with residues confirmed in 31 wells. In Fresno County, five wells had confirmed diuron detections. Glenn, Kern, Madera, and Stanislaus Counties each had one well with diuron residues. All of the wells were sampled by the CDFA as part of monitoring programs for PMZs except for the Madera County well which was sampled during a CDFA monitoring study to primarily determine if aldicarb leaches to ground water in the Central Valley.

Diuron has been previously reviewed through the PDRP, resulting in regulations, effective April, 1990, that prohibit the use of diuron in non-crop areas within diuron PMZs. The CDFA determined that 29 of the positive wells were due to legal agricultural use and, therefore, recommended that 15 sections be declared PMZs for diuron. Ten of the positive wells are still under investigation. The section containing a positive well in Glenn County was not recommended to be declared a PMZ.

(4) **Bromacil:**

The detection of the herbicide bromacil was confirmed in 21 wells in three counties out of 421 wells analyzed in 25 counties. Bromacil is used in California primarily for weed control in citrus orchards and on rights-of-way. Concentrations of residues detected ranged from 0.11 to 2.70 ppb. An MCL or AL has not yet been established by the CDHS for bromacil. However, the Lifetime Health Advisory Level (Lifetime HAL) established by the U.S. Environmental Protection Agency (EPA) for bromacil is 90.0 ppb.

Twenty of the 21 positive wells were sampled by the CDFA in response to previous detections of pesticides in Fresno, Tehama, and Tulare Counties. The remaining positive well was sampled by the CDHS as part of the AB 1803 monitoring program.

Bromacil has been previously reviewed through the PDRP. As a result, the CDFA adopted regulations, effective April, 1990, which prohibit the use of bromacil in non-crop areas within bromacil PMZs. Following the investigations of the 21 detections, the CDFA determined that 20 wells contained bromacil residues as a result of legal agricultural use and recommended that 15 sections be declared PMZs for bromacil. The remaining positive well in Tulare County is still under investigation.

(5) **Atrazine:**

The herbicide atrazine is used in California primarily to control weeds in non-crop areas. The detection of atrazine in well water samples was confirmed in 15 wells in five counties out of 879 wells sampled in 37 counties. Concentrations of residues ranged from 0.07 to 0.65 ppb. The CDHS's MCL for atrazine is 3.0 ppb. The CDFA sampled the 15 wells in response to previous detections of pesticides in Glenn, Solano, Stanislaus, Tehama, and Tulare Counties, and determined that 13 of the 15 positive wells contained residues of atrazine due to agricultural use. Two of the wells, one in Solano County and one in Tulare County, are still under investigation.

Atrazine has been previously reviewed through the PDRP. As a result, agricultural, outdoor institutional, and outdoor industrial uses of pesticides containing atrazine are prohibited within atrazine Pesticide Management Zones (PMZs). (A PMZ is a geographical area of approximately 1-square-mile which has been found to be sensitive to ground water contamination by certain pesticides). Following investigation of the detections, the CDFA recommended that five sections be declared atrazine PMZs.

(6) **1,2-D:**

The detection of the nematicide 1,2-D (1,2-dichloropropane) was confirmed in 11 wells in seven counties out of 1,324 wells sampled in 26 counties. 1,2-D was formerly an active ingredient in soil fumigants used to control nematodes for a wide range of crops. Concentrations of residues ranged from 0.60 to 56.0 ppb. There is no CDHS-established MCL for propylene dichloride. The CDHS's AL is set at 5.0 ppb.

The single wells in Santa Clara and Santa Cruz Counties containing residues of 1,2-D are point-source contaminations under investigation by the Central Coast Region of the Regional Water Quality Control Board. The remaining positive wells (three each in Kern and Siskiyou Counties and one each in

Fresno, Napa and Tulare Counties) were sampled as part of the CDHS monitoring program for AB 1803.

Because its use as an active ingredient has not been allowed since 1984, 1,2-D has not been reviewed under the PDRP.

(7) **EDB:**

Use of EDB, a soil fumigant, was suspended by the EPA in September 1984. Nevertheless, it continues to be detected in ground water. EDB residues were confirmed in nine wells in Kern County out of 668 wells sampled in 21 counties. Concentration of residues detected ranged from 0.03 to 4.70 ppb. The CDHS has established an MCL of 0.02 ppb for EDB.

The positive wells were sampled by the Kern County Health Department as part of their routine monitoring of Kern County. EDB has not been reviewed under the PDRP because it is no longer registered for use.

(8,9) **Aldicarb sulfone, Aldicarb sulfoxide:**

Aldicarb sulfone and aldicarb sulfoxide are breakdown products of aldicarb, a systemic acaricide, insecticide, and nematicide. Aldicarb sulfone was detected in seven wells and aldicarb sulfoxide in eight wells in Del Norte County where its use is no longer allowed. Concentrations of the sulfone and sulfoxide residues ranged from 0.18 to 1.02 ppb and from 0.21 to 1.97 ppb, respectively. The CDHS has not yet established a Maximum Contaminant Level (MCL) for aldicarb sulfone and aldicarb sulfoxide, although it has set an Action Level (AL) of 10.0 ppb for aldicarb. Currently, aldicarb is primarily used in California for insect and mite control in cotton, and mite and aphid control in sugar beets. Prior to 1986, it was used to control nematodes in lily bulbs in Del Norte and Humboldt Counties.

The positive wells were sampled in 1989 by the NCRWQCB in areas of Del Norte County where aldicarb had been used for the production of lily bulbs. Aldicarb is no longer registered for use in Del Norte and Humboldt Counties.

Aldicarb was previously reviewed through the PDRP and regulations were adopted in July of 1990 which reduce the likelihood of aldicarb reaching ground water by modifying its use. The regulations reduce the maximum rate at which aldicarb may be legally applied to certain agricultural and ornamental crops and prohibit the application of aldicarb to those same crops during the winter months.

(10) **Prometon:**

The detection of the herbicide prometon was confirmed in five wells in three counties out of 417 wells sampled in 23 counties. Prometon is used in California primarily to control weeds in non-crop areas. Concentrations of residues detected ranged from 0.36 to 0.97 ppb. The CDHS has not set an MCL or AL for prometon. The EPA Lifetime HAL is 100.0 ppb.

All of the positive wells were sampled by the CDFA as part of monitoring programs in areas adjacent to PMZs. Three of the positive wells, one in Glenn County and two in Tulare County, were located in sections which were not recommended to be declared PMZs by the CDFA because the presence of prometon was not due to agricultural use. The two positive wells in Fresno County are still under investigation.

Prometon has been previously reviewed through the PDRP, resulting in regulations, effective April 1990, which prohibit the agricultural, outdoor institutional, and outdoor industrial use of pesticides containing prometon within prometon PMZs.

(11) **Monuron:**

The detection of the herbicide monuron was confirmed in three wells in Tulare County out of 90 wells sampled in 11 counties. Concentrations of monuron residues detected by the CDFA in six samples were 0.04 ppb each; one sample had detected residues of 0.17 ppb. The CDHS has not established an AL or MCL for monuron and an EPA Lifetime HAL has not been established. Monuron is currently registered in California for home use only as a control for algae in aquariums. It was previously registered for use as an herbicide on rights-of-way.

The positive wells were sampled by the CDFA as part of monitoring programs for PMZs. Monuron was not entered into the PDRP because it is no longer registered for agricultural use.

(12) **Carbon disulfide:**

Carbon disulfide is the primary breakdown product of the nematicide and fungicide, sodium tetrathiocarbonate, which is currently registered for experimental use only in California. Until 1987, carbon disulfide was also registered as an active ingredient for use as a fumigant. It has been detected in a Santa Barbara County well as a result of sampling conducted by the CDHS as part of the AB 1803 monitoring program for public water supply systems. Concentrations of residues detected were 1.60 and 2.00 ppb. The CDHS has not set an MCL or AL, nor has the EPA set a Lifetime HAL, for carbon disulfide. The detection is under investigation by the CDFA.

(13) **Toxaphene:**

A confirmed detection of toxaphene, an insecticide, was made in a monitoring well in Santa Clara County out of 343 wells sampled in 25 counties. The concentrations of the residues detected in the two discrete samples were 1.80 and 4.90 ppb. The CDHS has set an MCL of 5.00 ppb for toxaphene.

The positive well was sampled by the Central Coast Region, RWQCB, as part of its ongoing investigation of point-source contamination at a former pesticide application facility.

Because toxaphene is no longer registered for use in California, it has not been reviewed through the PDRP.

(14) **Ortho-dichlorobenzene:**

Ortho-dichlorobenzene is an herbicide, insecticide, solvent, and soil fumigant which is not registered for use in California. It has been detected in a well in Tuolumne County as a result of sampling by the CDHS as part of the AB 1803 monitoring program. The residue concentrations ranged from 0.56 to 0.61 ppb. The CDHS and the EPA have not set a respective MCL or AL and Lifetime HAL for this compound.

Because ortho-dichlorobenzene is not registered for use in California, it has not been reviewed under the PDRP.

SECTION 2. UNCONFIRMED DETECTIONS

An unconfirmed detection (UD) is the detection of a particular pesticide in just one sample from a particular well, either because only a single sample was taken or because subsequent analyses of multiple samples taken from the same well at the same time as the detected sample contained no detectable residues. UDs may represent valid detections of pesticide residues or they may have been due to sample contamination; therefore, they cannot be presented with the same confidence as confirmed detections which have subsequent positive, discrete samples validating the presence of a pesticide. (See Appendix B, p. 84 for the CDFA criteria for confirmed detections.) Consequently, the UDs are presented separately from the confirmed detections.

The 114 UDs added to the data base for the 1990 report represent sampling conducted for a total of 23 pesticides and three breakdown products (aldicarb sulfone, carbon disulfide, and DCPA acid metabolite [a breakdown product of chlorthal-dimethyl]) in 99 wells in 24 counties. A county summary by pesticide and number of wells with UDs is presented in Table 9, p. 142.

UDs of pesticides registered for use at the time they were reported were investigated by the CDFA. Forty-three (38%) of the UDs were classified as unconfirmed because no residues were detected in subsequent samples. Of these multiple-sample UDs, 26 were not investigated by the CDFA because the detected pesticide was no longer registered for use. Nine of the remaining 17 multiple-sample UDs have been investigated and eight are still under investigation. The remaining 71 (62%) UDs were from wells where only one sample was taken during the time period of a single monitoring study. Of the 78 single-sample UDs, 49 were not investigated by the CDFA because the detected pesticide was no longer registered for use in California. Twenty of the remaining 22 single-sample UDs are still under investigation by the CDFA; two required no further investigation as they were located in sections already declared PMZs for the detected chemical.

D. LIMITATIONS ON INTERPRETING THE DATA

The well inventory data base is a compilation of the results of many diverse studies and monitoring activities designed by federal, state, and local agencies to investigate possible well water contamination from pesticides. Consequently, there is a disparate amount of sampling data from the 58 California counties. Therefore, predictions and conclusions about a pesticide's leachability are limited to only those areas where the pesticide has been sampled.

Below are some specific examples of deficiencies and differences found in studies included in the data base which preclude a complete, statewide description of the impact on California's ground water from the leaching of pesticides due to their legal agricultural use:

1. Few of the studies were of an ongoing nature. It is not known if wells that were once sampled and found to contain pesticides are still contaminated. This kind of information is necessary for drawing conclusions about the impact of the leaching of pesticides on the present state of ground water quality in California.

2. Information on the integrity of well construction is important when determining the source of contamination of that well. Pesticides in surface water run-off can enter a well directly through a cracked or non-existing sanitary seal, as well as from leaching. Well construction information, however, was rarely reported because most studies were designed to identify the presence or absence of pesticides in wells and not to determine the source of the residue or the integrity of the wells sampled. Therefore, it cannot be assumed that a pesticide detected in a well is necessarily the result of the pesticide having leached through the soil to ground water.

3. A lack of positive results may not indicate lack of potential for leaching. Negative results could indicate that a chemical has not leached through the soil to ground water after use because of some physical factor, such as soil type, that has delayed but not eliminated its percolation.

Negative results could also be due to the fact that the chemical had never been used in the area surrounding the well.

4. Well sampling for pesticide residues has not occurred uniformly throughout the state where pesticides are used. Because of the high cost of sampling and analyzing for pesticide residues, agencies usually sample for only a limited number of pesticides in a designated study area. As a result, sampling is not conducted for all pesticides used in the state nor is it conducted in all areas where a given pesticide is used. Therefore, interpretation of the significance of the results included in the data base must be limited to those pesticides sampled for and those areas sampled.

5. This data base does not contain the kinds of information necessary to determine the exact conditions and mechanisms which cause the contamination of ground water. Many factors must be considered, such as pesticide use patterns, cultural practices, soil-type, and climate. The detection of a particular pesticide in any two wells, whether in adjacent fields or in different counties, may be the result of entirely different sets of conditions and mechanisms.

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

1) displaying the geographic distribution of well sampling;
2) displaying the known geographic distribution of pesticide residues in wells among those wells sampled;
3) identifying areas potentially sensitive to pesticide leaching;
4) designing studies for future sampling.

E. SUMMARY AND CONCLUSIONS

The detection of 14 pesticides and related compounds in California's well waters has been reported to the CDFA between July 1, 1989 and June 30, 1990. The CDFA has determined that residues from a total of six of these chemicals have originated from agricultural non-point sources: aldicarb sulfone, aldicarb sulfoxide, atrazine, bromacil, diuron, and simazine. Many of the sections where these pesticides were detected will be declared PMZs and regulated accordingly.

Regulation of pesticides to prevent residues from entering ground water as a result of agricultural use depends on scientific knowledge of how pesticides move to ground water. Factors that contribute to ground water contamination by pesticides used in agriculture include amounts used and method of application, irrigation practices, the pesticide's physicochemical characteristics, soil type, and climate. The role each factor plays in the contamination process is not fully understood. The CDFA environmental scientists are continuing their work to understand these factors by conducting field studies on pesticide movement; investigating contaminated wells; conducting well monitoring; evaluating, developing and using computer models; and compiling extensive data bases. The knowledge gained from these activities will be used to develop recommendations for pesticide use practices that will prevent ground water contamination by pesticides.

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

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BACKGROUND

Effective regulation of pesticide use to prevent contamination of California's ground water requires (a) an understanding of the processes by which contamination occurs and (b) reliable methods for preventing or mitigating contamination.

Ground water contamination can result from either point or non-point sources. Contamination from a point source, such as a spill or at a waste site, is initially deposited and concentrated in a small, well-defined area. Residues leach from upper to lower soil layers, encountering and joining the flow of ground water at that point. The contamination can be traced to its point of origin by locating a specifically-shaped pattern of residues in the ground water called a plume. In contrast, contamination from a non-point source, such as applications of agricultural chemicals to crops, cannot be traced to a single, definable location. Instead, the contaminants are dispersed over a large, poorly-defined area. When a non-point source results in contamination, locating a distinct residue plume is not possible and contaminant movement is very difficult to predict or trace to its source.

Pesticide residues in ground water can result from non-agricultural or agricultural activities. Pollution from non-agricultural activity, such as industrial use, is usually attributed to a point source, such as leaks at manufacturing, storage, or waste sites. Industrial point sources have been the subject of considerable scientific research; 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 plume of contaminated ground water (Hunt,

et al., 1986). In addition, future contamination may be prevented by proper design and placement of storage or waste sites.

Residues of pesticides registered for agricultural use can reach ground water from both point and non-point sources. Point sources include pesticide storage or disposal sites and applicator wash-down 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 non-point 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. Compared to the amount of research done on point source contamination, much less has been done to understand the processes involved in the leaching of agricultural pesticides. However, what information there is, and any generated in the future, will be used to identify new agricultural practices that minimize the possibility of ground water pollution from pesticides.

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 found in ground water 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; however use of this option to control non-point source pollution from agricultural applications could result in crop loss.

2) To date, agricultural research has sought to find low, effective rates of pesticide application in order to keep production costs low. More research is needed to determine if application rates can be lowered further and still provide cost-effective protection. Where rates are already at their lowest effective level, new pest control methods will have to be devised.

3) Some procedures for mitigating contamination from point sources, such as removal of soil to appropriate waste sites, are not viable options for the clean-up of agricultural non-point source contamination.

For these reasons, research is needed on new effective pest control methods specifically designed to prevent future ground water contamination. Two examples of such research currently being conducted are: (1) modification of irrigation methods to prevent pesticide leaching and (2) research efforts in sustainable agricultural techniques.

DISCUSSION

Section 13152, subdivision (e)(3) of the Food and Agricultural Code requires the CDFA to provide the Legislature with a discussion of the factors that contribute to the movement of pesticides to ground water. These factors include the amount of pesticide used, method of application, physicochemical characteristics of pesticides, irrigation practices, and soil type.

Pesticide residues in soil may disappear from the initial site of deposition in a number of ways: (1) through microbial action (microbes detoxify or break down the pesticide to non-toxic compounds); (2) through chemical degradation processes, such as hydrolysis; (3) through volatilization (chemical vapors diffuse downward from the soil surface); (4) through leaching (the pesticide is transported from the upper to the lower layers of soil); or (5) through run-off water from agricultural land. A ground water problem arises when leaching occurs at a faster rate than other processes. Previously, researchers thought that under non-point source conditions, leaching occurred at such a low rate that pesticides would not move from the upper to the lower layers of soil. Since 1979, however, detections of pesticides in ground water have provided strong evidence for the importance of leaching as a source of ground water contamination.

Because there are no known economically feasible methods to remove pesticide residues found in ground water due to agricultural non-point sources, the best available way to mitigate the problem lies in the regulation of pesticides before or at their point of use. However, much less information exists on which to base regulatory decisions for non-point source leaching problems, than for point source problems. The CDFA is conducting studies to provide information on the factors that contribute to pesticide mobility in soil. A discussion of current findings on each of the factors follows.

USE AND METHOD OF APPLICATION

Known non-point 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 and many 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, soil surface application, soil incorporation, or both are important factors contributing to ground water contamination.

Also, there are no known differences in the leaching abilities of different pesticide formulations, such as wettable powders, granulars, or emulsifiable concentrates. There has been some research on the use of slow-release formulations as a method to prevent pesticide movement through the soil. However, the results to date are still preliminary.

One aspect of pesticide use that may be critical to leaching may be the timing of pesticide applications in relation to irrigation events. A recent theory of soil adsorption (Di Toro, 1985) proposes that the longer a pesticide remains in contact with the soil, the more resistant it becomes to leaching because the pesticide becomes more tightly bound to soil over time. To date, label recommendations for application of several of the herbicides detected in California ground water indicate that the compound should be watered into soil with a small amount of water (e.g., 0.25 to 0.50 inches). If more water is used to water-in the pesticide, much of the pesticide could leach past the root zone, away from its intended zone of activity. This same result could occur from small, but multiple, applications of water timed too closely in succession. Therefore, once the pesticide is watered into the root zone, the timing of the next irrigation may determine whether or not the pesticide leaches to ground water.

The CDFA initiated studies on the timing of pesticide and irrigation applications in the summer of 1989. The objectives were to provide evidence for the concept that leaching may be reduced by increasing the time between application of a pesticide and application of a large irrigation event. Three pesticides (atrazine, simazine, and bromacil) were applied to soil and

watered-in with 0.50 inch of water by sprinkler irrigation. Following the pesticide application, seven acre-inches of water were flooded onto the plots at one, seven, or fourteen days after the pesticides were watered into the soil. Preliminary results indicated that the concentration of bromacil in the surface six inches of soil increased with increase in the time interval between the small watering-in and the large flood irrigation events. Data for simazine and atrazine were confounded by field degradation which occurred during the entire study interval. Because of its long soil half-life, bromacil's data were not affected by field degradation. Apparently, the concept of maximizing time for reaction between pesticide and soil may be practical advice for the use of some, but not all, pesticides. It is interesting to note that bromacil has the lowest soil adsorption property of the three pesticides, which may help explain why a longer time interval was more effective at allowing greater reaction (Johnson, 1989). The study was replicated in the summer of 1990 in order to provide confirmation of the results from the 1989 study. Chemical analysis of the 1990 soil samples is currently being conducted.

IRRIGATION PRACTICES

An irrigation study conducted by the CDFA in 1987 and 1988 compared the movement of water and an herbicide, atrazine, in soil under four different methods of irrigation (Troiano, et al., 1990). The amount of water added was based on a water budgeting method that used measures of evapotranspiration (ETo), which is an estimate of the amount of water required to replenish that lost from soil evaporation and plant transpiration. The Department of Water Resources (DWR) maintains weather stations that record daily ETo values under the project "California Irrigation Management Information Systems" (CIMIS) (Snyder et al., 1985). The Office of Conservation, DWR, under contract with the University of California, has developed methods to incorporate ETo into water budgeting methods for agricultural use. Water budgeting also appears to have potential for managing pesticide leaching because of the close association between leaching and water lost to deep percolation, but the application of this concept to different irrigation methods needs validation. The CDFA

irrigation study illustrated how differences in irrigation methods affect pesticide movement.

The CDFA study was conducted in consecutive years during the summers of 1987 and 1988. Results were similar between years and indicated that at similar amount of water applied, different irrigation methods affected water movement and its distribution in soil. For example, sprinkler applications were made based on weekly cumulative ETo, whereas basin irrigations were made when a critical accumulated ETo value had been attained. Application of water in basin irrigation was much less frequent but of greater volume per irrigation. The movement of bromide, a tracer that mimicked water movement, was deeper in basin treatments than in sprinkler treatments. Theoretically, movement should be similar between different irrigation methods when the same amount of water was applied.

Pesticide movement also differed between irrigation methods. Water was applied to provide low, medium, and high levels of water percolation through the soil following irrigation events. For sprinkler irrigations, atrazine residues moved past the ten-foot soil depth, the deepest sample, only at the highest amount of water applied. For basin irrigation, atrazine residues moved past the ten-foot soil depth at the medium and high amounts of water applied. Because pesticide movement was retarded compared to the bromide water tracer, water movement itself was not a clear indicator of pesticide movement. More refined descriptors relating pesticide movement to water movement will have to be derived.

In summary, the use of available measures of ETo in conjunction with water budgeting methods could be an effective technique for controlling water and, subsequently, pesticide movement in soil. However, the use of ETo values in limiting pesticide movement will require further refinement when applied to different methods of irrigation. Models could aid in defining the requirement specific to each irrigation method for achieving the goal of preventing leaching. With this in mind, the CDFA has sponsored research to assess the fit of irrigation data to currently developed soil water and pesticide movement models. If a model proves satisfactory, it will be used as such an aid.

PHYSICOCHEMICAL CHARACTERISTICS OF PESTICIDES

The physicochemical characteristics of pesticides thought to be important in movement through soil are: soil adsorption (usually denoted by the coefficient of soil versus water partitioning, Kd or Koc), hydrolysis half-life due to microbial or chemical activity, vapor pressure, and water solubility. These factors are used in models of pesticide transport through soils (Rao, 1985). Cohen, et al. (1984) estimated values to act as indicators of leaching potential. In addition, section 13144 subdivision (a) of the Food and Agricultural Code requires the Department to set specific numerical values for these factors that are used to identify pesticides with the potential to leach to ground water. The Department has updated the established Specific Numerical Values described by Wilkerson and Kim (1986) in two reports entitled: Setting Revised Specific Numerical Values (Johnson, 1988 and 1989).

SOIL TYPE

The CDFA recognizes soil type as a very important factor in determining leaching of pesticides. Teso et al. (1988) have described the occurrence of DBCP residues in California ground water in relation to soil type. The CDFA has been developing a data base on the occurrence of soil types in mapped portions of California on a section basis; currently, soil types that are present in PMZ's can be identified in a computer file. Evaluation of these data for regulatory use is ongoing.

Results from the CDFA soil-coring studies indicate that organic carbon content of soil may be critical in determining the vulnerability of soils to leaching. Soils high in organic carbon tend to bond more with pesticides, a phenomenon which could result in increased rates of degradation, and thus, reduced rates of leaching. To test this possibility, the CDFA is comparing soil-coring data from in-house studies, as well as from other pertinent sources, such as reports from pesticide registrants who have conducted soil-coring studies. These data could be used to spatially relate soil-coring data with results of environmental sampling over broad areas. For example,

an initial comparison was made between soil cores collected in Ventura County, an area with no positive results from non-point source contamination, and soil cores in Tulare County, an area that contains numerous PMZs. Soil in Ventura County contained greater organic carbon down to greater depths than soil in Tulare County (Welling et al., 1986). The distribution of organic carbon in Tulare County may be described as being a thin layer compared to that in Ventura County.

More comparisons of a similar nature are needed to support the use of organic carbon content of soils as a predictive tool for determining future locations of PMZs. Such a tool could reduce reliance on the detection of pesticides in wells as the sole indicator of vulnerable areas.

RAINFALL

Climatic factors, such as precipitation, may override all of the previously mentioned factors in causing ground water contamination. An example of the influence of climate are the residues of aldicarb detected in well water in Del Norte County (Lee, 1983). Because soils in that area are high in organic matter, they may be expected to retard pesticide movement. However, annual rainfall may be over 80 inches, with as much as 50 inches occurring during the winter months from November to March. Aldicarb was applied in the fall to lily bulb fields to control nematode problems in the soil. The amount of winter rainfall was apparently sufficient to drive pesticide residues to the shallow ground water located at about ten feet, in spite of the high soil organic matter.

A different result was observed in a study recently completed by the CDFA (Troiano and Garretson, 1988). The effect of winter rain on movement of pesticides in the central San Joaquin Valley was investigated in the Fresno area. Because soils there are sandy, the area might be expected to be vulnerable to pesticide leaching. However, winter rainfall is usually much less there than in the Northern Coastal areas (e.g., ten inches in the San Joaquin Valley compared to 50 inches on the North Coast). For the study, an inorganic ion tracer was detected at about the 5.5 feet depth in the soil,

with some detected down to ten feet, the lowest depth sampled. In contrast, most of the pesticide simazine, which is known to leach through soils, was recovered in the first six inches of soil, with some residues detected down to six feet. At this site, there was some retardation in movement of the pesticide compared to water flow. In this situation, the amount of winter rainfall was insufficient to move pesticide residues to significant depths. Thus, climatic conditions, such as heavy rainfall, must not be overlooked as important factors in the leaching of pesticides through soils, and they may be important considerations in timing applications of pesticides.

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

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

The CDFA has responsibility for regulating the sales and use of pesticides in California. This responsibility includes providing for the proper, safe, and efficient use of pesticides for protection of the public health and safety, and for protecting the environment from environmentally harmful pesticides. To achieve the specific goal of ground water protection, the CDFA actions have focused on: (1) identifying which pesticides present a threat to ground water quality as a result of agricultural use, and (2) taking appropriate regulatory action to prevent or mitigate ground water contamination. The specific actions taken are described below.

PESTICIDE CONTAMINATION PREVENTION ACT (PCPA):

In addition to compiling the statewide inventory of wells sampled for pesticides described in this report, the CDFA has taken the following steps between July 1, 1989 and June 30, 1990 to implement the PCPA:

Proposed Regulations:

- June, 1990. The Director proposed regulations to revise the specific numerical values for water solubility, soil adsorption coefficient, and hydrolysis which are used to identify pesticides with the potential to leach to ground water. These values may be revised as additional chemical and environmental fate information becomes available.

Adopted Regulations:

- November, 1989. The Director adopted regulations to revise the specific numerical values for water solubility, soil adsorption coefficient, and hydrolysis which are used to identify pesticides with the potential to leach to ground water. These values may be revised as additional chemical and environmental fate information becomes available.

- April, 1990. The Director adopted regulations to do the following:

  (1) Add fifteen pesticides to the Ground Water Protection List on the basis of their detection in ground water (simazine, bromacil, diuron, and prometon), or their chemical and environmental fate characteristics and use patterns (cyanazine, fenamiphos, flumeturon, linuron, methiocarb, methomyl, metolachlor, metribuzin, naptalam, pebulate, and vernolate).

  (2) Establish PMZs for simazine, bromacil, diuron, and prometon, and to add to the existing list of PMZs for atrazine.

  (3) Change the ground water protection restrictions to require users to submit a written ground water protection advisory in order to obtain a permit to use a leaching pesticide in its PMZs.

  (4) Define "ground water protection advisory"; specify what information it shall include; and describe the requirements of licensed pest control advisers when writing such an advisory.

  (5) Establish use requirements for simazine, bromacil, diuron, and prometon that specify what uses are prohibited in PMZs.

  (6) Provide for research authorizations that would allow application of leaching pesticides in PMZs for research and experimental purposes.

Agricultural Use Determinations

Detections of new pesticide residues in well water or soil under certain conditions may be the result of monitoring studies conducted by the CDFA, or may be reported to the CDFA by local, state, or federal agencies that conduct monitoring. Once a detection of a new pesticide residue has been reported and verified, section 13149 subdivision (b) of the Food and Agricultural Code requires the Department to determine if the residue resulted from legal agricultural use. If the residue is determined to be the result of such use, the Department notifies the appropriate registrants of their opportunity to request a hearing. If requested, such a hearing of the Pesticide Registration and Evaluation Committee (PREC) subcommittee is held pursuant to sections 13149 and 13150 of the PCPA.

The agricultural use investigation includes a determination of whether:

(1) the residue detected, be it active ingredient, breakdown product, or any other specified ingredient, is from an economic poison that is registered for agricultural use in California;
(2) the application of such an economic poison in the vicinity of the detection was reasonably likely;
(3) a point source was a likely cause;
(4) a non-agricultural use of the economic poison was a likely source; or
(5) a non-pesticidal source was a likely cause.

The CDFA responds to pesticide detections in wells by conducting two types of surveys. First, a survey is conducted to locate a second positive well (i.e., a well with a confirmed detection of a pesticide) in the same area as the initial positive well. This helps in determining that the residue did not result from a point source. The well survey consists of collecting water samples from a minimum of five wells that are in the same section as the reported positive well and/or in one or more of the three adjacent sections located closest to the positive well. Well selection is based on proximity to the positive well and availability. Second, a land use survey is conducted to identify potential sources for the contamination.

Locations and sizes of crop and non-crop areas (such as natural vegetation, residential or industrial) are identified on a map, and the area immediately surrounding the positive well is carefully investigated.

Two agricultural use investigations were conducted between July 1, 1989 and June 30, 1990. Following those investigations, it was determined that a detection of 2,4-D in Colusa County and a detection of xylene in Sacramento County were not attributable to agricultural use.

New PMZs

A total of 24 detections of pesticides previously reviewed under the PCPA were investigated between July 1, 1989 and June 30, 1990. Presented in Table 10, p. 44 is a list of the detections in the order of occurrence, the county in which each detection was made, and the final recommendation. As a result of the investigations, 21 new PMZs in five counties were recommended. A recommendation was made for eight new PMZs for simazine, two for atrazine, four for bromacil, one for diuron, two for simazine/bromacil/diuron, and one each for simazine/atrazine, simazine/bromacil, simazine/diuron, and atrazine/bromacil.

Adjacent Section Monitoring

PMZs are established by regulation when a pesticide is detected in ground water or soil under certain conditions and there is evidence that the detection resulted from legal agricultural use. Sections adjacent to a PMZ may also be sensitive to ground water pollution, but because they have not have been sampled previously, information on which to base a determination that they should also be designated as PMZs is lacking. Consequently, the Department conducts adjacent section monitoring to determine if these areas are also sensitive to ground water pollution by pesticides.

Table 10. Pesticide detections investigated during the period July 1, 1989 through June 30, 1990.

County	Pesticide	Recommendation
Stanislaus	simazine	New PMZ Recommended
Fresno	simazine	New PMZ Recommended
Fresno	simazine	New PMZ Recommended
Tehama	atrazine	New PMZ Recommended
Tehama	prometon/diuron	PMZ Not Recommended
Stanislaus	simazine	New PMZ Recommended
Stanislaus	simazine	New PMZ Recommended
Stanislaus	simazine/atrazine	New PMZ Recommended
Fresno	bromacil/simazine	New PMZ Recommended
Fresno	diuron	New PMZ Recommended
Fresno	simazine	New PMZ Recommended
Tulare	prometon	PMZ Not Recommended
Tulare	bromacil	New PMZ Recommended
Tulare	bromacil	New PMZ Recommended
Tulare	prometon	PMZ Not Recommended
Tulare	prometon	PMZ Not Recommended
Tulare	bromacil	New PMZ Recommended
Tulare	simazine/bromacil/ diuron	2 New PMZ's Recommended
Tulare	bromacil	New PMZ Recommended
Tulare	prometon	PMZ Not Recommended
Tulare	diuron/simazine	New PMZ Recommended
Tulare	diuron	PMZ Not Recommended
Glenn	atrazine	New PMZ Recommended
Glenn	simazine	PMZ Not Recommended
Glenn	simazine	New PMZ Recommended
Glenn	diuron	PMZ Not Recommended
Glenn	prometon	PMZ Not Recommended
Tehama	simazine	New PMZ Recommended
Tehama	atrazine/bromacil	New PMZ Recommended

During the period of July 1, 1989 through June 30, 1990, well sampling was conducted in sections adjacent to established or proposed PMZs in Fresno, Merced, Tehama, and Tulare Counties. Between 9.7% and 100% of the adjacent sections in those counties were monitored, depending upon the number of sections selected for sampling and availability of wells in each section. Well samples were screened for atrazine, bromacil, diuron, prometon, and simazine. In many adjacent sections, no wells were sampled because there were none, existing wells were not operating, or permission to sample could not be obtained from well owners.

Results for wells sampled in the four counties are presented in Table 11, p. 46. Pesticide residues were found in wells sampled in Fresno and Tulare Counties, but were not found in wells sampled in Merced or Tehama Counties. Simazine was detected most frequently (26%, 26 wells of 100 sampled), followed by diuron (11%), bromacil (5%), and prometon (2%). None of the wells contained detectable residues of atrazine. Twenty-nine percent of the 100 wells sampled contained residues of at least one pesticide.

Table 12, p. 46 shows the number of sections with detections by county and pesticide. Fresno County had 13 sections with detections and Tulare County had ten; Merced and Tehama Counties had none. Forty-two percent of the 54 sections sampled had at least one chemical detected in at least one well. Simazine, the most frequently detected pesticide, was found in 21 (38.9%) of the 54 sections sampled.

Table 11. Sampling results from 1989-90 adjacent section monitoring, by number of wells.

	Number of wells containing:					Total wells	
County	atrazine	simazine	prometon	bromacil	diuron	Positive	Sampled
Fresno	0	16	2	0	3	17	48
Merced	0	0	0	0	0	0	16
Tehama	0	0	0	0	0	0	8
Tulare	0	10	0	5	8	12	28
Totals	0	26	2	5	11	29	100

Table 12. Sampling results from 1989-90 adjacent section monitoring, by number of sections.

	Number of sections containing:					Total sections	
County	atrazine	simazine	prometon	bromacil	diuron	Positive	Sampled
Fresno	0	13	2	0	3	13	24
Merced	0	0	0	0	0	0	8
Tehama	0	0	0	0	0	0	4
Tulare	0	8	0	5	7	10	18
	0	21	2	5	10	23	54

Compliance Monitoring

Regulations to prevent continued ground water contamination in PMZs include prohibiting some or all uses of chemicals listed in Title 3 of the California Code of Regulations, section 6800 subdivision (a) within their PMZs. To assure compliance with those prohibited uses, the Department conducts monitoring in selected areas. Each year, approximately 10% of the PMZs for each detected pesticide are monitored in various areas of the state to determine if prohibited ground water protection pesticides are present, as a result of illegal use, in soil samples taken from the PMZs.

During the period of July 1, 1989 through June 30, 1990, compliance monitoring was conducted for atrazine. A total of six PMZs, including two each in Glenn and Los Angeles Counties and one each in Contra Costa and Tulare Counties, were monitored. County Agricultural Commissioners' staff assisted in locating two sites in each selected PMZ where atrazine might have been used based on historical-use patterns. Replicate shallow soil samples were collected at each site and analyzed for atrazine.

Atrazine residues were not detected at any of the sites in Glenn or Tulare Counties. In Los Angeles County, low levels (0.16 to 0.24 ppm) of atrazine were detected at one site in one PMZ but not in the second PMZ. Atrazine was also detected at low concentrations (0.06 to 0.09 ppm) at one of two sites in the PMZ sampled in Contra Costa County. Calculations made from the atrazine concentrations found indicated that the residues were not from a recent application. Thus, no further action was required.

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

INTRODUCTION

In compliance with section 13152, subdivision (e)(4) of the Food and Agricultural Code, the State Water Resources Control Board provides to the State Legislature actions taken by the agency to prevent pesticides from migrating to the ground waters of the State.

State of California

Memorandum

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

Date : OCT 17 1990

D Cohen

David B. Cohen, Chief
Water Quality Branch
Division of Water Quality and Water Rights

From : **STATE WATER RESOURCES CONTROL BOARD**

Subject: PESTICIDE CONTAMINATION PREVENTION ACT (AB2021) ANNUAL REPORT (1990) TO THE LEGISLATURE

The Director of the California Department of Food and Agriculture (CDFA), in consultation with the State Water Resources Control Board (State Board), is required under the Pesticide Contamination Act to report any actions taken by the CDFA director and the State Board to prevent economic poisons from migrating to groundwaters of the State to the Legislature annually. The attached report is a summary of actions taken during the past year by the State Board and the California Regional Water Quality Control Boards.

If we can be of further assistance, please feel free to telephone me at 322-8401. The staff person currently working on this issue is Jack Hodges, and he can be reached at 445-1788.

Attachment

cc: Regional Board Executive Officers (with attachment)

Fresno, Redding, and Victorville Offices (with attachment)

Dale Claypoole, Chief (without attachment)
Program Control Unit

PESTICIDE CONTAMINATION PREVENTION ACT
ANNUAL REPORT TO THE LEGISLATURE
STATE WATER RESOURCES CONTROL BOARD
DECEMBER 1990

Actions taken by the State Water Resources Control Board (State Board) and the California Regional Water Quality Control Boards (Regional Boards) to prevent economic poisons from migrating to groundwaters of the State.

A. STATE BOARD

The interagency committee (Department of Food and Agriculture [DFA], Department of Health Services [DHS], and the State Board, established under AB 2021 to assess pesticides found in groundwater, met on April 19, 1990 to make findings on the rice herbicide Bentazon, which has been detected in a high percentage of wells in rice-growing counties. The Committee agreed unanimously to recommend to the DFA director that use of Bentazon on rice be cancelled, but that minor uses on other crops (dry beans, peas, and corn) be permitted in cases of urgent need under certain conditions of water management and monitoring. The Committee's report on Bentazon was completed in late May and forwarded to DFA. The DFA director has 30 days to concur or disagree with the Committee's recommendation.

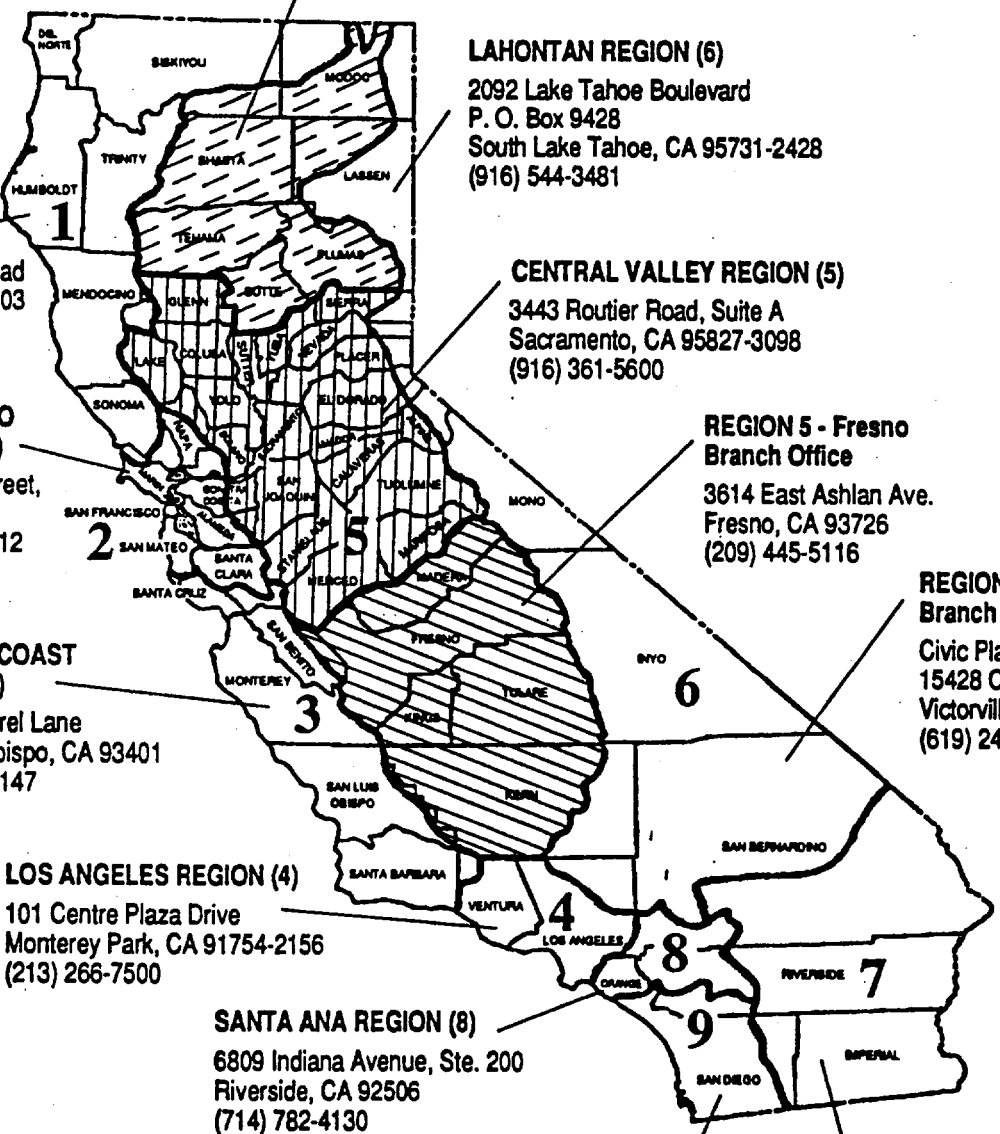
In April, U.S. Environmental Protection Agency (EPA) approved the State Board Quality Assurance Program Plan (QAPP). The QAPP outlines the procedures to be used by the State and Regional Boards to consistently produce quality environmental measurement data.

B. REGIONAL BOARDS

Information on actions to prevent economic poisons from migrating to the groundwaters of the State by each of the nine Regional Boards are listed in Tables 1 through 9.

STATE WATER RESOURCES CONTROL BOARD
P. O. Box 100, Sacramento, CA 95801

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARDS



REGION 5 - Redding Branch Office
415 Knollcrest Drive
Redding, CA 96002
(916) 224-4845

LAHONTAN REGION (6)
2092 Lake Tahoe Boulevard
P. O. Box 9428
South Lake Tahoe, CA 95731-2428
(916) 544-3481

NORTH COAST REGION (1)
1440 Guerneville Road
Santa Rosa, CA 95403
(707) 576-2220

CENTRAL VALLEY REGION (5)
3443 Routier Road, Suite A
Sacramento, CA 95827-3098
(916) 361-5600

SAN FRANCISCO BAY REGION (2)
1800 Harrison Street,
Suite. 700
Oakland, CA 94612
(415) 464-1255

REGION 5 - Fresno Branch Office
3614 East Ashlan Ave.
Fresno, CA 93726
(209) 445-5116

REGION 6 - Victorville Branch Office
Civic Plaza
15428 Civic Drive, Suite 100
Victorville, CA 92392-2359
(619) 241-6583

CENTRAL COAST REGION (3)
1102-A Laurel Lane
San Luis Obispo, CA 93401
(805) 549-3147

LOS ANGELES REGION (4)
101 Centre Plaza Drive
Monterey Park, CA 91754-2156
(213) 266-7500

SANTA ANA REGION (8)
6809 Indiana Avenue, Ste. 200
Riverside, CA 92506
(714) 782-4130

SAN DIEGO REGION (9)
9771 Clairemont Mesa Blvd.
Suite. B
San Diego, CA 92124
(619) 265-5114

COLORADO RIVER BASIN REGION (7)
73-271 Highway 111,
Suite. 21
Palm Desert, CA 92260
(619) 346-7491

Table 1. Actions taken by the ***North Coast Regional Board*** 1990.

The Regional Board referred a number of pesticide-related situations to the local public health authority for action. This is the normal course of action for these types of situations.

Table 2. Actions taken by the *San Francisco Bay Regional Board* 1990.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Alameda	Parker & Amchem	2,4-D 2,4,5-T	Soil Removal in September 1988 (Work completed). Groundwater assessment ongoing.
Contra Costa	Chevron Chemical	Arsenic pesticides (Endrin, Lindane, Dieldrin, DDT)	Have submitted closure plan for Class I impoundment. Ongoing groundwater assessment program.
Alameda	Jones-Hamilton	Pentachlorophenol	Regional Board Order 89-110 specifies time schedule for investigation/cleanup.
Alameda	Port of Oakland (Embarcadero Cove)	Chlordane Penta-chlorophenol	Department of Health Services
Alameda	Lincoln Properties (orsetti site)	DDE,2,4-D	Alameda County Water District lead.
Alameda	FMC, Newark	EDB	Regional Board Order 89-055 specified time schedule for investigation and cleanup.
Contra Costa	Levin Metals	Aldrin,4,4-DDD,4-DDE o,p-DDT, Dieldrin & BHC	EPA Lead Cleanup
Contra Costa	FMC, Richmond	DDT, DDD, DDE, Dieldrin Chlordane, Tedion, Endosulfan, Ethion, Carbophenothion, & Heptachlor	DHS Lead Cleanup

Table 3. Actions taken by the *Central Coast Regional Board* 1990.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Santa Cruz	WFS-Greengro, Watsonville	1,2-Dichloropropane at 21 ug/l	Consultant hired, investigation underway.
Santa Cruz	WFS-Greengro, Watsonville	1,2-Dichloropropane at 62 ug/l	Consultant hired, investigation underway.
Santa Cruz	WFS-Watsonville	DDT,DDD, and Endosulfan (Alpha & Beta)	Consultant hired, investigation underway.
Santa Clara	Castle, Morgan Hill	Toxaphene 18 ug/l, & 1,2-Dichloropropane 0.8 ug/l	Consultant hired, investigation underway.
Santa Clara	Castle, Morgan Hill	Toxaphene 18 ug/l and Endrin 0.15 ug/l	Consultant hired, investigation underway.
Santa Clara	Castle, Morgan Hill	Toxaphene 1.5 ug/l	Consultant hired, investigation underway.
Santa Clara	Castle, Morgan Hill	1,2-D 6.6 ug/l, Toxaphene 2.1 ug/l, and A-BHC 0.31	Consultant hired, investigation underway.
Santa Clara	Castle, Morgan Hill	1,2-D 3110 ug/l, Toxaphene 42.9 ug/l, G BHC 2.1 ug/l, Endosulfan 1.11 ug/l	Consultant hired, investigation underway.
Santa Clara	Castle, Morgan Hill	Toxaphene 15.1 ug/l, and G-BHC 0.069 ug/l (Lindane)	Consultant hired, investigation underway.
Monterey	WFS-Salinas	Dinoseb 2.6 ug/l	Consultant hired, investigation underway.
Monterey	Soilservice, King City	1,2 Dibromoethane 2.39 ug/l	Investigation and cleanup underway.
Monterey	Soilservice, King City	EDB 760 ug/l, 1,2 Dichloropropane 460 ug/l	Consultant hired, investigation and cleanup underway.
Monterey	Soilservice, Salinas	Dacthal	Followup sampling did not confirm initial analysis.

Table 4. Actions taken by the *Los Angeles Regional Board* 1990.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Los Angeles	U.S. Post Office (formerly Challanger Cook Brothers, Inc.) City of Industry	Lindane (gamma-BHC)	Monitoring ongoing.

Table 5. Actions taken by the *Central Valley Regional Board* 1990.

Information on over 300 pesticide applicator sites is available in the Regional Board's files. Many of these sites probably have pesticide contaminated soils and could pose a threat to groundwater. In December 1989, the Regional Board updated its policy for waving waste discharge requirements for these sites.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Fresno	Thompson Hayward Agriculture & Nutrition Company	Alpha-BHC, Beta-BHC, Gamma-BHC, Dieldrin, DBCP, Diphenamid, Heptachlor, Haptachlor Epoxide	Site on State Superfund. Contamination assessment ongoing.
	FMC Corporation	Aldrin, Dieldrin, DDT, DDD, DDE, Heptachlor, Lindane, Toxaphene, Ethyl Parathion, Malathion, Ethion, Endosulfan, Diemthoate, Furadan, DNOC, DNBP	Site on State Superfund. Remedial investigation/feasibility study in progress.
	Agro-West, Inc.	BHC, Dicofol, Endosulfan, Dacthal, 2,4-D, Diuron, Methomyl, Neburon, Propham	Site on State Superfund. Hydrogeologic assessment report submitted pursuant to the Toxic Pits Cleanup Act.
	Britz, Inc. Five Points	Toxaphene, DDT, Dinoseb	Site on State Superfund. Partial contamination assessment submitted. Additional contamination assessment reported. Closure plans requested.
	Chevron Chemical Company	Toxaphene, Arsenic	Assessment ongoing.
	Fresno County Wells*	DBCP, EDB, 1,2-D	Pesticides detected in 146 wells (AB 1803 sampling). Assessment ongoing.
	Central Valley Aviation	Unspecified	Assessment ongoing.
	Wilbur-Ellis	Unspecified	Assessment ongoing.
	Union Carbide Test Plot	Aldicarb	Additional contamination assessment ongoing.

Table 5. (continued)

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Fresno	Coalinga Airport	DDT, Chlorpyrifos, DEF, Ethion, Disyston	Contamination assessment requested.
	UC Agricultural Field Station Westside AFS (Five Points)	Simazine, Diuron, Prometon, MCPA	Both field stations are currently undergoing contamination assessment and installation of monitoring wells.
	UC Agrigultural Field Station Kearney Agricultural Center (Parlier)	DDD, DDE, Simazine Chloroprophan	
	Occidental Chemical/J.R. Simplot	Dieldrin	Surface impoundment excavated and closed. Monitoring of groundwater continues.
	Paramount Farming	Glyphosphate, Diuron Napropamide, Bromacil, Simazine	Assessing contamination beneath a dry well and developing a closure plan.
	Selma Agricultural Supply	DDT, DDE, Dieldrin, Chlordane, Endosulfan	Soil and groundwater contamination assessment ongoing.
Kern	Brown & Bryant, Inc. Arvin	1,2-D, 1,3-D, DBCP, EDB, Dinoseb	Site on State Superfund. Contamination assessment report requested.
	Puregro Company Bakersfield	DBCP	Site on State Superfund. Revised remedial action plan requested.
	Guimarra Vinyard	DBCP	Contamination assessment and pond closure plan requested (J.R. Simplot-Edison).
	WASCO Airport	Aldrin, Lindane, Endrin, Chlordane, Methoxychlor, DDT, DDD, DDE, Thimet, Malathion, Methylparathion, Paraoxon, Di-syston,Omite, Paraquat	Hydrogeologic Assessment Report completed. Site closure in progress.
	U.S.D.A., Shafter	Dichlobenil, EPTC, Prometryn	U.S.D.A. is obtaining funding for investigation and clean up.
	Kern County Wells*	DBCP, 1,2-D, EDB	Pesticides detected in 57 wells (AB 1803 sampling).

Table 5. (continued)

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Madera	Western Farm Service, Inc.	Dinoseb, DBCP, Dieldrin	Partial hydrogeological assessment report submitted. Additional contaminant assessment requested. Closure plan requested.
	Chowchilla Municipal Airport	Dieldrin, Alpha-BHC, Endosulfan, PCNB, DDT, DDE, Lindane	Contamination assessment requested.
	Madera County Wells*	DBCP, 1,2-D, EDB	DBCP detected in 2 wells (AB 1803 sampling).
Tulare	Mefford Field, City of Tulare	p,p'-DDT, p,p'-DDE, 2,4,5-TP, Dicamba, DNBP, Diuron	Contamination assessment and mitigation reports requested.
	Tulare Airport	2,4-D, DNBP	Assessment ongoing.
	Kaweah Crop Dusters	DDT, 2,4-D, 2,4,5-T, Methoxychlor	Department of Health Services Remedial Action Order issued January 1984. Cleanup of surface impoundment in progress.
	Western Air	Aldrin, DDE, Heptachlor	Hydrogeologic assessment and closure plan underway pursuant to Toxic Pits Cleanup Act.
	Tulare County Wells*	1,2-D	1,2-D detected in wells (AB 1803 sampling).
Sacramento	Sacramento Army Depot	Diazinon, Dursban, Lindane	Assessment report requested. Federal Superfund work in progress.
Sacramento	McClellan Air Force Base	Aldrin, Alpha-BHC, Beta-BHC, Delta-BHC, Gamma-BHC, (Lindane), 4,4-DDD, 4,4-DDE, 4,4-DDT, Dieldrin, Alpha-endosulfan, Endosulfan Sulfate, Heptachlor, Heptachlor Epoxide, 2,4-D, 2,4,5-T, 2,4,5-TP	Groundwater cleanup underway.

Table 5. (continued)

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
San Joaquin	Occidental Chemical Lathrop	2,4-D, 2,4,5-T, DEF, Toxaphene, Lindane, EDB, DBCP, Dieldrin, Delnav, Dimethoate, Disulfoton, Sevin, Heptachlor, DDT, DDE, DDD, Aldrin, Methylparathion, Ethylparathion	Site remediation occurring pursuant to stipulation and judgement approving settlement (1981).
	Defense Depot Tracy	Bromacil	Assessment ongoing.
	San Joaquin County Wells*	DBCP	Pesticides detected in 18 wells (AB 1803 sampling). Assessment ongoing.
	Sharpe Army Depot Stockton	Bromacil	Assessment ongoing.
	Trinkle & Boys Flying Service	2,4-D, Carbofuran, Chlorpyrifos, Diazinon, Endosulfan, Fenthion, Malathion, Methomyl, Prometon, Prometryn, Simazine, Toluene, Xylene	Assessment ongoing. Monitoring and reporting program issued.
	Marley Cooling	Arsenic, Copper, Chromium	Toxic Pits Cleanup Act site.
	McCormick & Baxter	Pentachlorophenols, Creosote	Toxic Pits Cleanup Act site.
	Navy Communication Station	DDD	Assessment ongoing.
	Triple "E" Produce	Chloroform	Assessment ongoing.
Stanislaus	Chemagic (manufacturing site; highly contaminated soil, and moderate levels in groundwater).	BHC, DDT	Ongoing monitoring. Groundwater treatment alternatives being evaluated. Field inspection and sampling.
	Geer Road Landfill	1,1NCA, 1,1,1TAA, 1,2TCE, TCE, PCA, Freons	Assessment continuing under monitoring program. Corrective action plan submitted.
	Stanislaus County Wells*	DBCP	DBCP detected in 42 wells (AB 1803 sampling). Assessment began February 1987. Ten Modesto City wells are included in a State Superfund Study.
	Union Carbide Test Plots	Aldicarb	Additional assessment work ongoing.

Table 5. (continued)

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Stanislaus	Shell Agricultrual (Research facility; pesticide in groundwater probably the result of use on test plots).	Bladex	Working with Shell on site evaluation. Bladex pollution contained on-site.
	Thunderbolt Riverbank (wood treatment facility).	Chromium	Evaluation of site for contamination and secondary conainment of treatment solutions. Groundwater extraction appears successful.
	Hawke Dusters (pesticides and possible breakdown products in groundwater under rinse water storage pond).	Dicofol, Methomyl, PCNB, Copper	Enforcement action against site owners in order to obtain site assessment and cleanup.
		1,2-DCE, Chloroform, 1,20DCA, 1,1,1-TCA, Carbon Tetrachloride, Bromodichloromethane	Cleanup and abatement order issued. Toxic Pits Cleanup Act site.
	Valley Wood	Copper, Chromium, Arsenic	Out-of-court settlement. Federal Superfund site. Interim cleanup in progress.
	City of Turlock Airport	Dieldrin, Propham, Neburon	Contaminated soil removed. Groundwate being monitored.
	Merced County Wells*	DBCP, Atrizine, Simazine	Pesticides detected in 25 wells (AB 1803 sampling).
	Merced Municipal Airport	DDT, DDD, DDE, Endosulfan, Toxaphene	Assessment began February 1990.
Sutter	Bowles Flying Service	2,4-D, Bolero, Diuron, Methayl, Ordram, Simazine	Assessment ongoing. Toxic Pits Cleanup Act site. Cease and Desist Order issued.
Yolo	Frontier Fertilizer Company, Davis	EDB	Cleanup and Abatement Order issued. State Superfund initiated.
	DOW Chemical Davis Agricultural Research Station	Picloram, Dinoseb, 1,2-D, 1,2-Dichloroethane	Cleanup of soils in progress, groundwater monitoring continuing.

Table 5. (continued)

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Yolo	Yolo County Wells*	1,2-D, EDB	Pesticides detected in two wells (AB 1803 sampling).
Modoc	I'SOT, Inc., Canby	Pentachlorophenol	Cleanup and Abatement Order issued to investigate extent of contamination and develop cleanup plans.
Siskiyou	Roseburg Forest Products Mt. Shasta	Pentachlorophenol	Staff enforcement to determine extent of contamination and develop appropriate action.
Shasta	Calaran Lumber Company, Redding	Pentachlorophenol	Staff enforcement to determine extent of contamination and develop appropriate action.
	Fibreboard Corporation Burney Operations	Pentachlorophenol	Staff enforcement to verify cleanup and removal of system and contaminated soil.
	Roseburg Forest Products, Paul Bunyan Facility	Pentachlorophenol	Staff enforcement to determine extent of contamination and develop appropriate action.
	Sierra Pacific Industries, Central Valley	Pentacholorophenol	Staff enforcement to determine extent of contamination and develop appropriate action.
	Sierra Pacific Industries, Old Champion Facility	Pentachlorophenol	Staff enforcement to verify cleanup and removal of system and contaminated soil.
Tehama	Crane Mills, Paskenta	Pentacholrophenol	Staff enforcement to determine extent of contamination and develop appropriate action.
	Louisiana-Pacific, Red Bluff Operations	Pentachlorophenol	Staff enforcement to determine extent of contamination and develop appropriate action.
	Waulevo, Inc., Corning	Pentachlorophenol	Staff enforcement to determine extent of contamination and develop appropriate action.

Table 5. (continued)

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Plumas	Siskiyou-Plumas Lumber Company Quincy Operations	Pentachlorophenol	Staff enforcement to determine extent of contamination and develop appropriate action.
Solano	Wickes Forest Industries	Chrome	Groundwater cleanup underway.
Colusa	Moore Aviation (pesticides in groundwater under rinse water disposal site).	2,4-D, MCPA	Site cleanup and groundwater remediation.
Glenn	Willows Airport (pesticides at low levels in shallow groundwater under disposal pond site).	Toxaphene, Endosulfan, Diuron, 2,4-D, Dinoseb, Dicamba	Pond closed, contaminated soil removed, groundwater monitoring ongoing.
Kings	Calardo, Inc.	Propargite, Pendimethalin	Site closed, no further monitoring.
	Lemoore N.A.S.	Unspecified	Investigation ongoing.
	Blair Field	2,4-D, Dicofol, Diazinon, Propargite	Investigation rinse water discharge to earthen ditch.
	Blair Aviation	Trifluralin, Mevinphos, Phorate	Contamination assessment requested.
Kings	Lakeland Dusters	DDT, Toxaphene	Toxic Pits Cleanup Act site, hydrogeologic assessment report is late; appropriate enforcement action is being considered.
Tuolumne	Tuolumne County Wells*	Methylene Chloride	Methylene chloride detected in one well (AB 1803 sampling).

* Number of wells under investigation from AB 1803 sampling.

Fresno County - 30
Kern County - 2
Tulare County - 2
Merced County - 24
Stanislaus County - 1
Yolo County - 2
Tuolumne County - 1

Table 5a. **Rice seed soaking facilities formerly evaluated for pesticide residues in waste water in *Central Valley Regional Board* (Region 5). Use of pesticides has been discontinued in the seed soaking process.**

COUNTY	FACILITY	TOWN
Butte	Butte County Rice Grower's Association	Richvale
Colusa	DePue Warehouse	Delevan
	DePue Watehouse, Spooner Facility	Williams
	Farmers Rice Cooperative	Princeton
	Myers & Charter	Arbuckle
	Rice Growers Association	Williams
Glenn	Glenn Growers	Glenn
Sutter	El Centro Storage	Pleasant Grove
	Hi & Dry Warehouse	Sutter
	Van Dyke Rice Growers	Pleasant Grove

Table 6. Actions taken by the *Lahontan Regional Board* 1990.

No actions were taken this year.

Table 7. Actions taken by the *Colorado River Basin Regional Board* 1990.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Imperial	Central Brave Agricultural Service	4,4-DDE, Endosulfan II	Recalcitrant Discharger. Referred to Attorney General for nonpayment of fees.
	City of Brawley	4,4-DDE, Dieldrin	Completing sampling for Hydrogeologic Assessment Report required by Toxic Pits Cleanup Act.
	Visco Flying Service	4,4-DDE, 4,4-DDD, 4,4-DDT, Endosulfan I & II	Impoundment remediated, capped, and closed in place.
	U.C. Davis Agricultural Field Station	Docthal, Diuron	Completing work for Hydrogeological Assessment Report under Toxic Pits Cleanup Act.
	J.R. Simplot Company Sandin Siding Facility	Dieldrin, 4,4-DDT, Endrin	Cleanup and Abatement Order. Site in remediation process.
	Stoker Company	Endosulfan I, Endosulfan II, Dinoseb, 2,4-DB	Closure of surface impoundment.
	Ross Flying Service	4,4-DDD, 4,4-DDE 4,4-DDT, Dieldrin	Closure of surface impoundment. Quarterly monitoring of groundwater.
Riverside	West Coast Flying	Endosulfan I & II, Disalfoton, Dimethoate	Recalcitrant Discharger. Referred to Attorney General for nonpayment of fees.
	Woten Aviation Services	Disyston, DEF, Ethylparathion, Methylparathion	Cleanup and Abatement Order.
	Foster Gardner Facility	4,4-DDT, 4,4-DDD, Toxaphene, 4,4-DDE	Remediation action is in progress.
	Cy Mouradick & Sons, Inc.	4,4-DDE, Lindane, Dibromochloropropane	Site assessment in progress.
	Farmers Aerial Service, Inc.	4,4-DDE, Endosulfan I	Closure of disposal area.

Table 8. Actions taken by the *Santa Ana Regional Board* 1990.

There are currently 99 confirmed detections of pesticides in the Santa Ana Region. Only one of these has been attributed to a point source discharge. Groundwater extraction and treatment at this site is being performed under an order issued by the Regional Board. With the exception of this, all detections on this list are from domestic and agricultural production wells. Ninety six of these wells contain dibromochloropropane (DBCP), four contain simazine, and one contains 1,2-dichloropropane (two wells contain both DBCP and simazine).

The presence of DBCP in the Region's groundwater has resulted in both an actual and threatened impact on the beneficial use of water as a drinking water supply, as 77 of the 94 wells containing DBCP are drinking water wells.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Orange	Great Western Savings, Irvine	1,2-D, EDB, 1,2-DCA	NDPES permit issued November 1986. Groundwater extraction and treatment continuing.
Riverside	Sunnymead MWC (wells 3&4 mun)	DBCP	One well has been abandoned and the other well will be used by a new owner for landscape irrigation. A new source of water supply is being considered from an adjacent water agency.
	Arlington Basin	DBCP	Contract has been awarded to local agency under the State Board Agricultural Drainage Loan Program for the construction of a seven MGD reverse osmosis plant with partial flow through a GAC unit for treatment of TDS, NO_3 and DBCP. Plant startup scheduled for September 1990.
	City of Corona (well 8, mun)	Simazine	Chemical Use Questionnaires have been sent to nearby potential sources to determine if solely nonpoint source related. Chlorinated solvents have also been found. Site investigation in progress.
	Home Gardens CWD (wells 2&3, mun)	DBCP, Siamzine	Water purveyor has closed these wells and is now purchasing water from City of Riverside.
	City of Riverside (Twin Spring, mun)	DBCP	Well is out of service.

Table 8. (continued)

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Riverside	Victoria Farm MWC (well 01, mun)	DBCP	Well is being used; DBCP concentration is below Maximum Contaminant Level.
	City of Riverside (moor-Griff, mun)	DBCP	Well is out of service.
	City of Riverside (Russell "B", mun)	Simazine	Water is being used for domestic purposes.
	City of Riverside (1st Street, mun)	DBCP	Well is not being used due to high concentrations of DBCP.
	City of Riverside (Electric Street, mun)	DBCP	Well is not being used due to high concentrations of DBCP.
	City of Riverside (Palmyrita, mun)	DBCP	Well is not being used due to high concentrations of DBCP.
	City of Riverside (3 wells, mun)	DBCP	Water from Hunt Wells No. 6, 10, and 11 is being blended with other wells in the area.
	City of Riverside (4 wells, emergency, Downtown Riverside)	DBCP	These four wells are also contaminated with industrial organic solvents. Investigation is underway to determine the source of the solvents.
	Riverside County Hall Record, (pr)	DBCP	VOCs such as TCE and PCE have also been found. Well is used for emergency purposes only.
	Loma Linda University, Arlington, (Wells 1&2, mun)	DBCP	The University is currently working with the City of Riverside to tie into the City domestic water supply distribution system. These two wells will be used for irrigation purposes at the school.
	Home Gardens School (mun)	DBCP	Well was abandoned about one year ago. The school is now using water from Home Gardens Water District.

Table 8. (continued)

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Riverside	Buschlen, Dwight (mun)	DBCP	Well was abandoned about three years ago. A second well on the property with no traces of DBCP is being used for drinking water and irrigation.
San Bernardino	Gage System Wells (11 wells, mun)	DBCP	The City of Riverside operates the Gage System which consists of 13 wells located along the Santa Ana River. These wells are being blended for domestic use. The City of Riverside is currently working with the Santa Ana Watershed Project Authority and the U.S. Bureau of Reclamation to determine the feasibility of applying Granular Activated Carbon (GAC) technology to these wells.
	Bunker Hill Basin: Crafton/Redlands area (32 wells)	DBCP	The City of Redlands currently has approved a contract with the State Board for a maximum loan of $2.8 million and as of July 1990, has access to over $1.9 million of State Bond money through the State Expenditure Plan which is managed by Department of Health Services (DHS). Design of a 6,000 gpm GAC system to treat two contaminated wells has been completed. DHS contract is being drafted and is scheduled to be signed in September 1990.
	South San Bernardino Company Water District (4 wells, mun)	DBCP	Currently, the Water District is buying water from the City of San Bernardino and City of Redlands. All four wells are out of service and may be abandoned soon.
	Cucamonga CWD (4 wells, mun)	DBCP	All four wells are being used for domestic purposes. Each of the wells are being pumped to a separate reservoir and are blended with six other wells.
	Monte Vista CWD (3 wells, mun)	DBCP	All three wells are on stand-by status. Water is being purchased from MWD.

Table 8. (continued)

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
San Bernardino	City of Upland (15 wells, mun)	DBCP	Eight wells are out of operation. Seven wells are currently being used. Some blending is required to pump these wells.
	City of Loma Linda (5 wells, mun)	DBCP	One well is off-line. The other four wells are being used due to a drop in DBCP levels. The City performed a test on one well using a Rotor Strip unit. Test results indicated some DBCP removal, but the removal efficiency was not satisfactory. A pilot scale air stripping study has also been performed by the City. Test results indicate that DBCP may be removed to satisfactory levels. The City also has capability of purchasing water from the City of San Bernardino.

Table 9. Actions taken by the *San Diego Regional Board* 1990.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
San Diego	City of Oceanside Water Utility District (well no. 12-11S/4W-18L1 S)	1,2-Dichloropropane	This backup drinking water well is located in the San Luis Rey River Valley. 1,2-Dichloropropane of up to 2.3 ppm has been detected in this well. The City of Oceanside is continuing monitoring of this well and reports to the county.
	Truly Nolen Exterminating, Inc.	Aldrin, Dieldrin, Chlordane	This is an on-site abandoned well which allegedly received pesticide wastes several years ago. The pesticide constituents in the soil and groundwater include aldrin, dieldrin, and chlordane. Contaminated soil has been removed. Groundwater is being monitores.

APPENDIX A

THE PESTICIDE CONTAMINATION PREVENTION ACT

Assembly Bill No. 2021

CHAPTER 1298

An act to add Article 15 (commencing with Section 13141) to Chapter 2 of Division 7 of the Food and Agricultural Code, relating to water contamination.

[Approved by Governor September 30, 1985. Filed with Secretary of State September 30, 1985.]

LEGISLATIVE COUNSEL'S DIGEST

AB 2021, Connelly. Economic poisons: groundwaters.

(1) Existing law does not require registrants of economic poisons to submit specified information relating to contamination of groundwaters as part of the initial registration or renewal of registration process.

This bill would enact the Pesticide Contamination Prevention Act. The bill would require each registrant of an economic poison registered for agricultural use to submit specified information to the Director of Food and Agriculture, not later than December 1, 1986, relating generally to the impact of the economic poison on water sources. The bill would provide for an extension for submission of some of this information for up to 2 years, as specified, but in no event later than December 1, 1989. Since violation of these provisions would be a misdemeanor, the bill would impose a state-mandated local program. Inadequate information on a particular economic poison would be defined to be a groundwater protection data gap after a specified determination by the director. The director would be prohibited from registering or renewing the registration of an economic poison with a groundwater protection data gap after December 1, 1988, for economic poisons applied with ground-based application equipment or by chemigation and after December 1, 1989, for economic poisons intended for use with other than ground-based application equipment, unless the registrant has been granted a current extension under the bill.

The director would be required to establish the Groundwater Protection List of specified economic poisons and to report specified information to the Legislature, the State Department of Health Services, and the State Water Resources Control Board not later than December 1, 1987, regarding economic poisons, as specified.

The director would be required to perform a soil and water monitoring program pursuant to a specified schedule and would be required to report all monitoring results to the State Department of Health Services and the board.

The bill would require the director, on or before December 1, 1987, and annually thereafter, to request a budget appropriation in order to fund specified activities under the bill.

The bill would also require the director to cancel the registration of economic poisons with specified criteria relating to groundwater findings unless the registrant is granted an extension or the director makes specified findings.

The bill would also require the director to maintain a specified well sampling data base and, not later than June 30, 1986, the director, the State Department of Health Services, and the board, jointly, would be required to establish minimum requirements for well sampling that would apply to all agencies conducting the sampling after December 1, 1986. This requirement would impose a state-mandated local program on local agencies so affected. The director would be required to report annually, commencing on December 1, 1986, to the State Department of Health Services and the board on well sampling, as specified.

(2) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement, including the creation of a State Mandates Claims Fund to pay the costs of mandates which do not exceed $500,000 statewide and other procedures for claims whose statewide costs exceed $500,000.

This bill would provide that reimbursement shall be made pursuant to those statutory procedures and, if the statewide cost does not exceed $500,000, shall be payable from the State Mandates Claims Fund, except that, for certain costs, the bill would provide that no reimbursement is required for a specified reason.

(3) The bill would provide that, notwithstanding Section 2231.5 of the Revenue and Taxation Code, this bill does not contain a repealer, as required by that section; therefore, the provisions of the bill would remain in effect unless and until they are amended or repealed by a later enacted bill.

The people of the State of California do enact as follows:

SECTION 1. Article 15 (commencing with Section 13141) is added to Chapter 2 of Division 7 of the Food and Agricultural Code, to read:

Article 15. The Pesticide Contamination Prevention Act

13141. The Legislature finds and declares all of the following:

(a) It is the right of every citizen in this state to drink safe, potable, wholesome, and pure drinking water.

(b) The health and economic prosperity of rural communities and individual farm families in the state are threatened by contaminated drinking water supplies because of their proximity to the use of pesticides.

(c) Pesticide contaminants and other organic chemicals are being

found at an ever increasing rate in underground drinking water supplies.

(d) The United States Environmental Protection Agency has concluded that evidence of relatively localized levels of pesticide pollution should be treated as a warning of more widespread, future contamination.

(e) Groundwater once polluted cannot be easily cleaned up; thus, there is a considerable potential that groundwater pollution will continue long after actions have been taken to restrict application of the pesticide to land.

(f) Due to the potential widespread exposure to public drinking water supplies from pesticide applications to the land and the resultant risk to public health and welfare, the potential for pollution of groundwater due to pesticide use must be considered in the registration, renewal, and reregistration process.

(g) It is the purpose of this article to prevent further pesticide pollution of the groundwater aquifers of this state which may be used for drinking water supplies.

13142. For the purposes of this article, the following definitions apply:

(a) "Board" means the State Water Resources Control Board.

(b) "Groundwater protection data gap" means that, for a particular economic poison, the director, after study, has been unable to determine that each study required pursuant to subdivision (a) of Section 13143 has been submitted or that each study submitted pursuant to subdivision (a) of Section 13143 is valid, complete, and adequate.

(c) "Henry's Law constant" is an indicator of the escaping tendency of dilute solutes from water and is approximated by the ratio of the vapor pressure to the water solubility at the same temperature.

(d) "Soil adsorption coefficient" is a measure of the tendency of economic poisons, or their biologically active transformation products, to bond to the surfaces of soil particles.

(e) "Pesticide registrant" means a person that has registered an economic poison pursuant to this chapter.

(f) "Agricultural use" has the same meaning as defined in Section 11408.

(g) "Active ingredient" has the same meaning as defined in Section 136 of Title 7 of the United States Code.

(h) "Economic poison" has the same meaning as defined in Section 12753.

(i) "Degradation product" means a substance resulting from the transformation of an economic poison by physicochemical or biochemical means.

(j) "Pollution", for the purposes of this article, means the introduction into the groundwaters of the state of an active ingredient, other specified product, or degradation product of an

active ingredient of an economic poison above a level, with an adequate margin of safety, that does not cause adverse health effects.

(k) "Chemigation" means a method of irrigation whereby an economic poison is mixed with irrigation water before the water is applied to the crop or the soil.

(*l*) "Soil microbial zone" means the zone of the soil below which the activity of microbial species is so reduced that it has no significant effect on pesticide breakdown.

13143. (a) Not later than December 1, 1986, a person that has registered an economic poison in California for agricultural use shall submit to the director the information prescribed in this subdivision. The information shall be submitted for each active ingredient in each economic poison registered. The registrant shall submit all of the following information:

(1) Water solubility.

(2) Vapor pressure.

(3) Octanol-water partition coefficient.

(4) The soil adsorption coefficient.

(5) Henry's Law constant.

(6) Dissipation studies, including hydrolysis, photolysis, aerobic and anaerobic soil metabolism, and field dissipation, under California or similar environmental use conditions.

(7) Any additional information the director determines is necessary.

(b) The director also may require the information prescribed in subdivision (a) for other specified ingredients and degradation products of an active ingredient in any economic poison. The director shall also require this information when the State Department of Health Services or the board submits a written request for the information to the director, if the State Department of Health Services or the board specifies the reasons why they consider the information necessary. The director shall deny the request upon a written finding that, based on available scientific evidence, the request would not further the purposes of this article.

(c) All information submitted pursuant to subdivision (a) shall be presented in English and summarized in tabular form on no more than three sheets of paper with the actual studies, including methods and protocols attached. All information shall, at a minimum, meet the testing methods and reporting requirements provided by the Environmental Protection Agency Pesticide Assessment Guidelines, Subdivision D Series 60 to 64, inclusive, for product chemistry and Subdivision N Series 161 to 164, inclusive, for environmental fate, including information required for degradation products in specific studies. With prior approval from the director, registrants may use specified alternative protocols as permitted by the United States Environmental Protection Agency guidelines, if the director finds use of the protocol is consistent with, and accomplishes the objectives of, this article. Studies conducted on active ingredients in the

formulation of economic poisons shall meet the same testing methods as required for studies conducted on active ingredients. The department, in consultation with the board, may, in addition, require specified testing protocols that are specific to California soil and climatic conditions. The director may give a pesticide registrant an extension of up to two years if it determines that this additional time is necessary and warranted to complete the studies required in paragraph (6) of subdivision (a). No extension of the deadline for these studies shall go beyond December 1, 1989. When seeking the extension, the registrant shall submit to the director a written report on the current status of the dissipation studies for which the extension is being sought. For registrants granted an extension pursuant to this section, Section 13145 shall be effective upon the completion date established by the director.

(d) The director may grant the registrant an extension beyond the one authorized in subdivision (c), if all of the following conditions are met:

(1) The registrant submits a written request to the director for an extension beyond the one granted pursuant to subdivision (c). The request shall include the reasons why the extension is necessary and the findings produced by the study up to the time the request is made.

(2) The director finds that the registrant has made every effort to complete the studies required in paragraph (6) of subdivision (a) within the required time limits of the extension granted pursuant to subdivision (c) and that those studies could not be completed within the required time limits due to circumstances beyond the control of the registrant.

(3) The director establishes a final deadline, not to exceed one year beyond the time limit of the extension granted pursuant to subdivision (c), and a schedule of progress by which the registrant shall complete the studies required in paragraph (6) of subdivision (a).

(e) After December 1, 1986, no registration of any new economic poison shall be granted unless the applicant submits all of the information required by the director pursuant to this article and the director finds that the information meets the requirements of this article.

13144. (a) Not later than December 1, 1986, the department shall establish specific numerical values for water solubility, soil adsorption coefficient (Koc), hydrolysis, aerobic and anaerobic soil metabolism, and field dissipation. The values established by the department shall be at least equal to those established by the Environmental Protection Agency. The department may revise the numerical values when the department finds that the revision is necessary to protect the groundwater of the state. The numerical values established or revised by the department shall always be at least as stringent as the values being used by the Environmental

Protection Agency at the time the values are established or revised by the department.

(b) Not later than December 1, 1987, and annually thereafter, the director shall report the following information to the Legislature, the State Department of Health Services, and the board for each economic poison registered for agricultural use:

(1) A list of each active ingredient, other specified ingredient, or degradation product of an active ingredient of an economic poison for which there is a groundwater protection data gap.

(2) A list of each economic poison that contains an active ingredient, other specified ingredients, or degradation product of an active ingredient which is greater than one or more of the numerical values established pursuant to subdivision (a), or is less than the numerical value in the case of soil adsorption coefficient, in both of the following categories:

(A) Water solubility or soil adsorption coefficient (Koc).

(B) Hydrolysis, aerobic soil metabolism, anaerobic soil metabolism, or field dissipation.

(3) For each economic poison listed pursuant to paragraph (2) for which information is available, a list of the amount sold in California during the most recent year for which sales information is available and where and for what purpose the economic poison was used, when this information is available in the pesticide use report.

(c) The department shall determine to the extent possible, the toxicological significance of the degradation products and other specified ingredients identified pursuant to paragraph (2) of subdivision (b).

13145. (a) Any registrant of an economic poison identified in paragraph (1) of subdivision (b) of Section 13144 shall be subject to a fine of up to ten thousand dollars ($10,000) for each day the groundwater protection data gap exists. In determining the amount of the fine, the director shall consider both of the following:

(1) The extent to which the registrant has made every effort to submit valid, complete, and adequate information within the required time limits.

(2) Circumstances beyond the control of the registrant that have prevented the registrant from submitting valid, complete, and adequate information within the required time limits.

(b) If there is a dispute between the director and a registrant regarding the existence of a groundwater protection data gap and the director desires to levy a fine on the registrant pursuant to this section, the director shall submit the issues of the dispute to the subcommittee created pursuant to subdivision (b) of Section 13150. The subcommittee shall review the evidence submitted by the registrant and the director and make recommendations to the director on whether or not the groundwater data gap exists.

(c) The provisions of subdivisions (a) and (b) shall not apply to pesticide products whose registration has lapsed or has been

cancelled, or to products that have been granted a current extension pursuant to Section 13143.

(d) The director shall, by regulation, establish a list of economic poisons that have the potential to pollute groundwater. The list shall be entitled the Groundwater Protection List. Notwithstanding the provisions of Chapter 3.5 (commencing with Section 11340) of Division 3 of Title 2 of the Government Code, the director shall immediately place all economic poisons identified in paragraph (2) of subdivision (b) of Section 13144 on the Groundwater Protection List and shall regulate the use of these economic poisons if the economic poison is intended to be applied to or injected into the soil by ground-based application equipment or by chemigation, or the label of the economic poison requires or recommends that the application be followed, within 72 hours, by flood or furrow irrigation. The director shall adopt regulations to carry out the provisions of this article. The regulations shall include, but are not limited to, the following:

(1) Any person who uses an economic poison which has been placed on the Groundwater Protection List is required to report to the county agricultural commissioner the use of the economic poison on a form prescribed by the director. The reporting deadline shall conform to the deadline established for the reporting of the use of restricted materials.

(2) Dealers of economic poisons shall make quarterly reports to the director of all sales of economic poisons. This report shall include lists of all sales by purchases.

13146. (a) The director shall not register or renew the registration of an economic poison intended to be applied to or injected into the ground by ground-based application equipment or by chemigation after December 1, 1988, if there is a groundwater protection data gap for that economic poison, unless the registrant has been granted a current extension pursuant to Section 13143.

(b) The director shall not register or renew the registration of an economic poison intended for use with other than ground-based application equipment after December 1, 1989, if there is a groundwater protection data gap for that economic poison, unless the registrant has been granted a current extension pursuant to Section 13143.

(c) If a registrant does not comply with the information requirements of Section 13143, the department shall file the information requirements of Section 13143 in accordance with procedures provided in subparagraph (B) of paragraph (2) of subsection (c) of Section 136a of Title 7 of the United States Code. In order to carry out this section, the director has the same authority to require information from registrants of active pesticide ingredients that the administrator of the Environmental Protection Agency has pursuant to subparagraph (B) of paragraph (2) of subsection (c) of Section 136a of Title 7 of the United States Code.

On or before July 1, 1986, the director shall, by regulation, prescribe procedures for resolving disputes or funding the filing of the information requirements of Section 13143. The procedures may include mediation and arbitration. The arbitration procedures, insofar as practical, shall be consistent with the federal act, or otherwise shall be in accordance with the commercial arbitration rules established by the American Arbitration Association. The procedures shall be established so as to resolve any dispute with the timetable established in Section 13143.

(d) For an active ingredient or economic poison for which a registrant or registrants do not provide the information required pursuant to Section 13143, the director may determine the active ingredient or economic poison to be critical to agricultural production and the director may utilize assessments charged to those registrants of the active ingredient for which the information is required pursuant to Section 13143 in amounts necessary to cover the department's expenses in obtaining the information. The assessment shall be made pursuant to Section 12824. The director may also request an appropriation to be used in combination with assessments to obtain the required information.

13147. On or before December 1, 1987, and annually thereafter, the director shall request a budget appropriation in order to meet the reasonable and anticipated costs of conducting soil and water monitoring pursuant to Section 13148, a review of data submitted pursuant to Section 13143, and the administration of economic poisons placed on the Groundwater Protection List pursuant to this article.

13148. (a) In order to more accurately determine the mobility and persistence of the economic poisons identified pursuant to paragraph (2) of subdivision (b) of Section 13144 and to determine if these economic poisons have migrated to groundwaters of the state, the director shall conduct soil and groundwater monitoring statewide in areas of the state where the economic poison is primarily used or where other factors identified pursuant to Section 13143 and subdivision (b) of Section 13144, including physicochemical characteristics and use practices of the economic poisons, indicate a probability that the economic poison may migrate to the groundwaters of the state. The monitoring shall commence within one year after the economic poison is placed on the Groundwater Protection List and shall be conducted in accordance with standard protocol and testing procedures established pursuant to subdivision (b). Monitoring programs shall replicate conditions under which the economic poison is normally used in the area of monitoring. In developing a monitoring program, the director shall coordinate with other agencies that conduct soil and groundwater monitoring.

(b) Within 90 days after an economic poison is placed on the Groundwater Protection List pursuant to subdivision (d) of Section

13145, the director, in consultation with the board, shall develop a standard protocol and testing procedure for each economic poison identified pursuant to subdivision (d) of Section 13145.

(c) The director shall report all monitoring results to the State Department of Health Services and the board.

13149. (a) Within 90 days after an economic poison is found under any of the conditions listed in paragraph (1), (2), or (3), the director shall determine whether the economic poison resulted from agricultural use in accordance with state and federal laws and regulations, and shall state in writing the reasons for the determination.

(1) An active ingredient of an economic poison has been found at or below the deepest of the following depths:

(A) Eight feet below the soil surface.

(B) Below the root zone of the crop where the active ingredient was found.

(C) Below the soil microbial zone.

(2) An active ingredient of an economic poison has been found in the groundwaters of the state.

(3) The economic poison has degradation products or other specified ingredients which pose a threat to public health and which have been found under the conditions specified for active ingredients in either paragraph (1) or (2).

(b) Upon a determination by the director that an economic poison meets any of the conditions specified in paragraph (1), (2), or (3) of subdivision (a) as a result of agricultural use in accordance with state and federal laws and regulations, the director shall immediately notify the registrant of the determination and of the registrant's opportunity to request a hearing pursuant to subdivision (c).

(c) Any economic poison that meets any of the conditions in subdivision (b) shall be subject to the provisions of Section 13150, provided the registrant of the economic poison requests, within 30 days after the notice is issued, that the subcommittee conduct a hearing, as described in Section 13150. Notwithstanding any other provision of law, if the registrant does not request the hearing within 30 days after the notice is issued, the director shall cancel the registration of the economic poison.

(d) For the purposes of this section, any finding of an economic poison shall result from an analytical method approved by the department and shall be verified, within 30 days, by a second analytical method or a second analytical laboratory approved by the department.

13150. The director may allow the continued registration, sale, and use of an economic poison which meets any one of the conditions specified in Section 13149 if all of the following conditions are met:

(a) The registrant submits a report and documented evidence which demonstrate both of the following:

(1) That the presence in the soil of any active ingredient, other specified ingredient, or degradation product does not threaten to pollute the groundwaters of the state in any region within the state in which the economic poison may be used according to the terms under which it is registered.

(2) That any active ingredient, other specified ingredient, or degradation product that has been found in groundwater has not polluted, and does not threaten to pollute, the groundwater of the state in any region within the state in which the economic poison may be used according to the terms under which it is registered.

(b) A subcommittee of the director's pesticide registration and evaluation committee, consisting of one member each representing the director, the State Department of Health Services, and the board, holds a hearing, within 180 days after it is requested by the registrant, to review the report and documented evidence submitted by the registrant and any other information or data which the subcommittee determines is necessary to make a finding.

(c) The subcommittee, within 90 days after the hearing is conducted, makes any of the following findings and recommendations:

(1) That the ingredient found in the soil or groundwater has not polluted and does not threaten to pollute the groundwaters of the state.

(2) That the agricultural use of the economic poison can be modified so that there is a high probability that the economic poison would not pollute the groundwaters of the state.

(3) That modification of the agricultural use of the economic poison pursuant to paragraph (2) or cancellation of the economic poison will cause severe economic hardship on the state's agricultural industry, and that no alternative products or practices can be effectively used so that there is a high probability that pollution of the groundwater of the state will not occur. The subcommittee shall recommend a level of the economic poison that does not significantly diminish the margin of safety recognized by the subcommittee to not cause adverse health effects.

When the subcommittee makes a finding pursuant to paragraph (2) or (3), it shall determine whether the adverse health effects of the economic poison are carcinogenic, mutagenic, teratogenic, or neurotoxic.

(d) The director, within 30 days after the subcommittee issues its findings, does any of the following:

(1) Concurs with the subcommittee finding pursuant to paragraph (1) of subdivision (c) of Section 13149,

(2) Concurs with the subcommittee finding pursuant to paragraph (2) of subdivision (c) of Section 13149, and adopts modifications that result in a high probability that the economic poison would not pollute the groundwaters of the state,

(3) Concurs with the subcommittee findings pursuant to

paragraph (3) of subdivision (c), or determines that the subcommittee finding pursuant to paragraph (2) of subdivision (c) will cause severe economic hardship on the state's agricultural industry. In either case, the director shall adopt the subcommittee's recommended level or shall establish a different level, provided the level does not significantly diminish the margin of safety to not cause adverse health effects.

(4) Determines that, contrary to the finding of the subcommittee, no pollution or threat to pollution exists. The director shall state the reasons for his or her decisions in writing at the time any action is taken, specifying any differences with the subcommittee's findings and recommendations. The written statement shall be transmitted to the appropriate committees of the Senate and Assembly, the Department of Health Services, and the board.

When the director takes action pursuant to paragraph (2) or (3), he or she shall determine whether the adverse health effects of the economic poison are carcinogenic, mutagenic, teratogenic, or neurotoxic.

13151. Any economic poison identified pursuant to Section 13149 which fails to meet any of the conditions of Section 13150 shall be canceled.

13152. (a) The director shall conduct ongoing soil and groundwater monitoring of any economic poison whose continued use is permitted pursuant to paragraph (3) of subdivision (d) of Section 13150.

(b) Any economic poison monitored pursuant to this section that is determined, by review of monitoring data and any other relevant data, to pollute the groundwaters of the state two years after the director takes action pursuant to paragraph (3) of subdivision (d) of Section 13150 shall be canceled unless the director has determined that the adverse health effects of the economic poison are not carcinogenic, mutagenic, teratogenic, or neurotoxic.

(c) The director shall maintain a statewide data base of wells sampled for pesticide active ingredients. All agencies shall submit to the director, in a timely manner, the results of any well sampling for pesticide active ingredients and the results of any well sampling that detect any pesticide active ingredients.

(d) Not later than June 30, 1986, the director, the State Department of Health Services, and the board shall jointly establish minimum requirements for well sampling that will ensure precise and accurate results. The requirements shall be distributed to all agencies that conduct well sampling. All well sampling conducted after December 1, 1986, shall meet the minimum requirements established pursuant to this subdivision.

(e) The director, in consultation with the State Department of Health Services and the board, shall report the following information to the Legislature, the State Department of Health Services, and the board on or before December 1, 1986, and annually thereafter:

(1) The number of wells sampled for pesticide active ingredients, the location of the wells from where the samples were taken, the well numbers, if available, and the agencies responsible for drawing and analyzing the samples.

(2) The number of well samples with detectable levels of pesticide active ingredients, the location of the wells from which the samples were taken, the well numbers, if available, and the agencies responsible for drawing and analyzing the samples.

(3) An analysis of the results of well sampling described in paragraphs (1) and (2), to determine the probable source of the residues. The analysis shall consider factors such as the physical and chemical characteristics of the economic poison, volume of use and method of application of the economic poison, irrigation practices related to use of the economic poison, and types of soil in areas where the economic poison is applied.

(4) Actions taken by the director and the board to prevent economic poisons from migrating to groundwaters of the state.

SEC. 2. Reimbursement to local agencies and school districts for costs mandated by the state pursuant to this act shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code and, if the statewide cost of the claim for reimbursement does not exceed five hundred thousand dollars ($500,000), shall be made from the State Mandates Claims Fund, except that no reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution for those costs which may be incurred by a local agency or school district because this act creates a new crime or infraction, changes the definition of a crime or infraction, changes the penalty for a crime or infraction, or eliminates a crime or infraction.

SEC. 3. Notwithstanding Section 2231.5 of the Revenue and Taxation Code, this act does not contain a repealer, as required by that section; therefore, the provisions of this act shall remain in effect unless and until they are amended or repealed by a later enacted act.

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APPENDIX B

ANALYTICAL METHODS FOR THE VERIFICATION OF GROUND WATER CONTAMINATION BY PESTICIDES

Verification

All reports of pesticide residues in ground water are considered verified after the following has occurred:

(1) Two discrete samples from the same site have been taken by the Department, no longer than 30 days apart, and have been analyzed by a method approved by the Department and found to contain the substance under investigation. If only a degradation product of the substance under investigation is subsequently detected, then the degradation product itself must be detected in a second discrete sample. This first step of the verification process provides evidence that the well was contaminated and the residue was not due to contamination during sampling and transport or during lab processing and analysis.

(2) The residue has been detected by one laboratory using different analytical methods approved by the Department or by two different laboratories using an analytical method approved by the Department. This second step provides evidence that the residue was precisely identified and could not be due to lab contamination or chemist error.

Definition of Different Analytical Methods

Confirmation of a residue by a second analytical method is intended to increase the confidence in the positive detection of a chemical by the first analytical method. If the measurement procedures of the second method vary only slightly from the first method, it is likely that an erroneous identification in the first determination would also occur in the second. Therefore, the second method should be based on separation and/or detection processes as different from the first method as feasible.

The minimum changes needed in the first method to qualify it for consideration as a second method depend on the specificity of both methods. The following matrix lists the possible combinations where "detection and separation" is defined as a significant change in both detector and separation procedure, "detection" is a significant change in the detector only, and "detection or separation" is a significant change in the detector or separation procedure.

Minimum requirements for procedural changes in a first method to qualify it as a second method:

First Method	Second Method	
	nonspecific	specific
nonspecific	detection & separation	detection only
specific	detection only	detection or separation

Specific Methods

A specific method provides positive identification of the measured chemical. This unequivocal identification implies that the detection system can distinguish the target compound from all other compounds in a given mixture, with or without the need for an additional separation procedure. A method is also considered to be specific if all known interferences yield insignificant responses, i.e., the sensitivity for the interfering compound is less than 0.1% of the sensitivity for the target compound.

Examples for specific methods are spectroscopic techniques like mass spectroscopy (MS) and Fourier transform infrared (FTIR) spectroscopy, which are generally used together with separation techniques like gas chromatography (GC) or high performance liquid chromatography (HPLC).

Nonspecific Methods

All methods that respond to more than one chemical and which use detectors that cannot distinguish between these different chemicals are considered to be nonspecific. Analytical methods that incorporate nonspecific detectors rely completely on separation procedures for identification. The problem with nonspecific detectors is that they can only prove the absence of a chemical when no signal is registered at the proper conditions for the chemical in question. When a signal is measured, however, one can only say that it is likely that the signal is caused by that chemical. But it is not a proven fact, as another component of the unknown mixture might interfere and the detector cannot distinguish between the two.

This definition of nonspecific includes the majority of GC techniques. For example, nitrogen-phosphorus specific detectors used in GC analysis are specific only on the atomic level; they can distinguish nitrogen and phosphorus atoms from other atoms, but they cannot distinguish between one nitrogen-containing chemical and another.

Significant Change

A significant change in detector means a change in detection principle (for GC, a change from a flame photometric detector [FPD] to a conductivity detector, for example). A significant change in the separation procedure is either a change in separation principle (from GC to HPLC, for example) or a change in the separation condition (i.e., using a different type of column), as long as this change will alter the sequence in which the compounds are registered.

Following are examples for the three types of minimum changes (detection and separation, detection only, and detection or separation), given in the previous matrix, that qualify as significant changes:

Case 1

When both the first and the second method are nonspecific, both the detector and the separation procedure have to be changed

significantly. For example, a first method using GC separation and a FPD could use as a second method either a GC with a significantly different column and a nitrogen-phosphorus detector (changing separation conditions and detector) or an HPLC separation with a UV-detector (changing separation principle and detector).

Case 2

When only one of the methods is specific, just the detection principle has to be changed; the separation procedure may be kept the same (GC/FPD and GC/MS using the same column, for example).

Case 3

When both methods are specific, either the detector or the separation procedure may be changed. Examples for these cases are GC/MS and HPLC/MS (keeping the same detector) or GC/MS and GC/FTIR (keeping the same separation conditions).

In the cases (2 and 3) where only a change in detector is needed, it is acceptable to use an integrated system where the effluent of the separation step is split and routed to two detectors. An example for this is GC/MS/FTIR, where the effluent of the GC is analyzed by MS and FTIR simultaneously. As this integrated analytical instrument uses two specific detectors, it counts as both first and second method.

Screening Methods

Special consideration has to be given to qualitative or semi-quantitative methods typically used for screening. Qualitative methods yield only detected/not detected results; semi-quantitative methods indicate the order of magnitude for the concentration of the identified chemical. Samples identified as positive will be forwarded for analysis by a quantitative method.

In this case, the qualitative screen is considered to be the first method. The quantitative method is then selected based on the above criteria for a second method. A second quantitative method (i.e, a third analysis method) is required only when verification is needed not only for the identity of the compound but also for its concentration. Analogously, a qualitative method may be used as a second method if verification of the concentration level is not required. A qualitative method cannot be used as a second method when the first method is qualitative also.

For example: a specific enzyme-linked immunosorbent assay (ELISA) may be used as a first method, even if it is used just as a detected/not detected screen. A nonspecific ELISA qualifies as a second detector for the effluent from an HPLC. Note, however, that any ELISA which shows significant cross-reactivity to other compounds is considered to be nonspecific and would also require a change in the separation procedure.

APPENDIX C

FORMAT OF DATA ENTRY SHEETS

Format of Data Entry Sheets:

The format of the Well Inventory Data Entry Sheets has changed since the 1988 update report. The study number columns have been expanded from two to four and columns 16, 17, 70, and 112, previously blank spaces, have been incorporated into various data fields on the entry sheets.

Each chemical analysis for a pesticide residue or related chemical in a well water sample constitutes one record in the data base. Each record may contain up to 149 columns of data, although the majority of records contain 132 columns. The following is an explanation of the format. Definitions for the codes used on the data sheets can be found in Appendix B.

Column Number	Explanation of Data Entry Sheets
1-2	County code: a minimum reporting requirement. This code is consistent with the CDFA Pesticide Use Report format.
3-14	State well number (township/range/section/tract/sequence number): a minimum reporting requirement. 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, cols. 3-5) are oriented from north to south and are 6 miles long. Range lines (R, cols. 6-8) 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, cols. 9-10), numbered consecutively from 1 to 36. Each section is again divided into 16 individual 40 acre tracts (Tr, col. 11) that are identified by letters (A through R, excluding I and O). Wells in a tract are further identified with a sequential number (cols. 12-14) in the order of identification by the DWR.
15	Base line and meridian: this minimum reporting requirement is included in the state well number. 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.
16	In-house code.
17-20	Study number: numbers were assigned consecutively as studies were obtained. (See Appendix D for summary of each study).
21-24	Sampling agency code: a minimum reporting requirement.

Column Number	Explanation of Data Entry Sheets
25-30	Date of sample: a minimum reporting requirement. Day, month, and year of each sampling record is included. The middle month of an indicated period is used when only a season is designated as the sampling date, e.g., "all samples were taken in spring of 1982." However, the precise sampling date is recorded for most studies.
31-35	Chemical code: a minimum reporting requirement. Each chemical is assigned a 5-digit chemical code which corresponds to the chemical codes used in the Pesticide Use Reporting System maintained by the Information Services Branch of the CDFA. Breakdown products of pesticides are distinguished from their parent compound by the letter "B, C, D, N, or X" preceding the last four digits of the parent compound's code, e.g. 00259 = endosulfan, B0259 = endosulfan sulfate. Pesticides sampled for that have not been registered for use in California are assigned sequential numbers preceded by the letter "U", e.g. U0012 = fenuron.
36	Sample type: a minimum reporting requirement.
37-42	Chemical concentration: a minimum reporting requirement. Analytical results are recorded in parts per billion (ppb) in scientific notation. Columns 37-40 are the significant figures, column 41 is the sign of the exponent (+ or -), and column 42 is the exponent (power of 10). Trace amounts, non-detected, or less than the minimum detectable limit values are all recorded as non-detected (0.00+0).
43-48	Minimum detectable limit (MDL): a minimum reporting requirement. The MDL for the chemical assay is recorded in ppb, in the same format as chemical concentration. The MDL for a given compound may vary by laboratory, date, or year, reflecting differences in analytical techniques.
49-52	Analyzing laboratory: a minimum reporting requirement.
53	Method of analysis: general type of analytical method is designated (e.g., I = In-house).
54-59	Date of analysis: a minimum reporting requirement. Month/day/year.
60-63	File name: internal file designation.
64-65	Summary year: indicates the year of the Well Inventory Summary Report in which each record appears. This is used for extracting from the main file only that data to be included in yearly updates.

Column Number	Explanation of Data Entry Sheets
66-114	Well location information: a minimum reporting requirement. Designates the street name and number or descriptive address of the well.
	Well-construction information - obtained from water well drillers' reports or well logs (confidential):
115-118	Well depth (in feet): the completed well depth, as recorded on the well log.
119-121	Depth to top of perforation (in feet): as recorded on the well log.
122-125	Depth to bottom of perforation (in feet): as recorded on the well log; often corresponds to depth of completed well.
126-129	Water depth: the depth of standing water in the well at time of sampling.
130-131	Log year: year the well was drilled; information obtained from well log, raw data, or verbally from a well owner.
132	Well code: a minimum reporting requirement. This code indicates well use, e.g., private domestic, irrigation, or both.
	Latitude/Longitude:
133-140	Latitude: the latitude is expressed in degrees (DD), minutes (MM) and seconds (SS.S). Seconds may be specified to the nearest tenth of a second. The format is DDMMSS.S. (The decimal point is implied and not included in a column.)
141-149	Longitude: the longitude is expressed in degrees (DDD), minutes (MM) and seconds (SS.S). Seconds may be specified to the nearest tenth of a second. The format is DDDMMSS.S. (The decimal point is implied and not included in a column.)

WELL INVENTORY FORMAT

STATE OF CALIFORNIA
DEPARTMENT OF FOOD
AND AGRICULTURE

ENVIRON. MONITOR. & PEST MGMT
ENVIRON. HAZARDS ASSESSMENT
1220 N STREET ROOM A-149

LINE NO	TEMPORARY NUMBER	COUNTY	STATE WELL NUMBER: TOWN-SHIP	RANGE	SECTION	TRACT	SEQUENCE NUMBER	BASE MERIDIAN	STUDY #	SAMPLING AGENCY	SAMPLE DATE: MONTH	DAY	YR	CHEMICAL CODE	SAMPLE TYPE	CHEMICAL CONCEN-TRATION (ppb)	MINIMUM DETECTABLE LEVEL (ppb)	ANALYZING LAB	ANAL. METH.	DATE OF ANALYSIS: MONTH	DAY	YR	FILE NAME	SUMMARY YEAR
	1 2 3 4	5 6	7 8 9	1 1 2	3 4	5	6 7 8	9	2 1 2 3 4	5 6 7 8	9 3	1 2	3 4	5 6 7 8 9	4	1 2 3 4 5 6	7 8 9 5	1 2	3 4 5 6	7	8 9	6	1 2 3	4 5 6 7	8 9
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								

WELL LOCATION ADDRESS

WELL CONSTRUCTION INFORMATION

LINE NO	STREET NUMBER		STREET NAME	P or N		WELL DEPTH	TOP PERF	BOTTOM PERF	WATER DEPTH	LOGYEAR	WELLCODE
	7 1 2 3 4	5	6 7 8 9 8 1 2 3 4 5 6 7 8 9 9 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 1 1 2 3 4 5	6	7 8	9 2 1 2	3 4 5	6 7 8 9	3 1 2 3	4 5	6
1											
2											
3											
4											
5											
6											
7											
8											

APPENDIX D

EXPLANATION OF CODES USED IN THE 1990 UPDATE REPORT

I. County Codes

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 included in the 1990 data base.

II. Sampling Agency Code

Code	Agency Name
2894	California Regional Water Quality Control Board (RWQCB), Region 1 (North Coast)
4323	California Department of Food and Agriculture (CDFA) - Environmental Hazards Assessment Program
5050	California Department of Water Resources (DWR)
5060	California Department of Health Services (CDHS) - Sanitary Engineering Branch
5108	Sacramento County Health Department (SCHD)
5119	Kern County Health Department (KCHD)
8385	U.S. Environmental Protection Agency (U.S. EPA)
8493	California Regional Water Quality Control Board (RWQCB), Region 3 (Central Coast)

III. Well Study Codes

Code	Agency	Pesticide(s) Analyzed
23	CDHS	AB1803 chemicals (139 chemicals analyzed for)
67	RWQCB	fenamiphos
72	KCHD	DBCP & EDB
116	SCHD	AB1803 chemicals
129	RWQCB	dacthal, nitrates, & various contaminants
139	CDFA	atrazine, bromacil, diuron, prometon, & simazine
140	RWQCB	1,2-D, 1,1,2,2-Tetrachloroethane, & EDB
141	CDFA	atrazine, bromacil, diuron, prometon, & simazine
142	RWQCB	61 chemicals analyzed for
143	CDFA	atrazine, bromacil, diuron, prometon, & simazine
144	CDFA	2,4-D, atrazine, bromacil, diuron, prometon, & simazine
145	CDFA	atrazine, bromacil, diuron, prometon, simazine, & xylenes
147	CDFA	atrazine, bromacil, diuron, prometon, & simazine
148	CDFA	atrazine, bromacil, diuron, prometon, & simazine
149	CDFA	atrazine, bromacil, diuron, prometon, & simazine
150	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine screen
151	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine & urea screen
152	CDFA	atrazine, bromacil, diuron, linuron, monuron, prometon, simazine, & triazine and urea screen
153	CDFA	atrazine, bromacil, diuron, linuron, monuron, prometon, simazine, & triazine and urea screen
154	CDFA	atrazine, bromacil, diuron, linuron, monuron, prometon, simazine, & triazine and urea screen
155	CDFA	atrazine, bromacil, diuron, linuron, monuron, prometon, simazine, & triazine and urea screen
156	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine screen

Well Study Codes (continued)

157	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine screen
158	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine screen
159	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine screen
160	CDFA	atrazine, bromacil, diuron, prometon, & simazine
161	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine screen
162	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine screen
163	CDFA	atrazine, bromacil, diuron, prometon, & simazine
164	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine screen
165	RWQCB	aldicarb, aldicarb sulfone & sulfoxide, phorate, phorate sulfone & sulfoxide, phoratoxon, phoratoxon sulfone & sulfoxide, fenamiphos, & fenamiphos sulfone and sulfoxide
166	CDHS	aldicarb
168	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine screen
169	CDFA	atrazine, bromacil, diuron, prometon, & simazine
170	CDFA	atrazine, bromacil, diuron, prometon, simazine, & triazine and urea screen
171	CDFA	aldicarb, aldicarb sulfone & sulfoxide, atrazine, bromacil, diuron, prometon, simazine, & triazine and urea screen
173	U.S. EPA	104 chemicals analyzed for
174	DWR	DBCP & EDB

IV. Base Meridian Codes

H = Humboldt
M = Mt. Diablo
S = San Bernardino

V. Method of Analysis Codes

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

VI. Road Codes

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

VII. Chemical Codes

Code	Common Name
U0019	1,1,2,2-tetrachloroethane
00600	1,2,4-trichlorobenzene
00185	1,2-dichloropropane
00573	1,3-dichloropropene (1,3-D)
00639	2,4,5-T
00640	2,4,6-trichlorophenol
00636	2,4-D
00221	2,4-dinitrophenol
C0694	3,5-dichlorobenzoic acid
B0106	3-hydroxycarbofuran
C0106	3-ketocarbofuran phenol
00837	4(2,4-DB), butoxyethanol ester
B0200	5-hydroxy dicamba
U0011	acenapthene
01685	acephate
00003	acrolein
00678	alachlor
00575	aldicarb
N0575	aldicarb sulfone
X0575	aldicarb sulfoxide
00009	aldrin
00018	ametryne
U0001	aminocarb
00020	amitrole
00710	arsenic
U0002	atraton
00045	atrazine
B0045	atrazine dealkylated
00314	azinophos-methyl
00055	barban
00053	benefin
01552	benomyl
01944	bentazon, sodium salt
90359	BHC (other than gamma isomer)
00083	bromacil
U0021	butachlor
00565	butylate
00104	captan
00105	carbaryl
02176	carbendazim
00106	carbofuran
D0106	carbofuran phenol
00108	carbon disulfide
01755	carboxin

Chemical Codes (continued)

00130	chlordane
00300	chlordimeform
00135	chloroneb
00136	chloropicrin
00677	chlorothalonil
00576	chloroxuron
00141	chlorpropham
00253	chlorpyrifos
02143	chlorsulfuron
00179	chlorthal-dimethyl
00714	copper
00165	coumaphos
01640	cyanazine
00516	cycloate
00180	dalapon
00183	DBCP
D0179	DCPA acid metabolites
00184	DDD
02092	DDE
00186	DDT
00187	DDVP
00566	demeton
00198	diazinon
00200	dicamba
00112	dichlobenil
00923	dichlorprop, butoxyethanol ester
00346	dicofol
00210	dieldrin
00216	dimethoate
00238	dinoseb
00226	diphenamid
00229	diquat dibromide
00230	disulfoton
00231	diuron
00533	DNOC, sodium salt
00259	endosulfan
B0259	endosulfan sulfate
00260	endothall
00262	endrin
B0262	endrin aldehyde
00264	EPTC
00268	ethion
00404	ethoprop
00271	ethylene dibromide (EDB)
B0001	ethylene thiourea
01857	fenamiphos
N1857	fenamiphos sulfone
X1857	fenamiphos sulfoxide
01980	fenarimol
00181	fensulfothion
00063	fenthion
U0012	fenuron

Chemical Codes (continued)

01848	fluchloralin
00166	fluometuron
02279	fluridone
00295	formaldehyde
01855	glyphosate, isopropylamine salt
00317	heptachlor
B0317	heptachlor epoxide
00321	hexachlorobenzene
01871	hexazinone
00359	lindane (gamma-BHC)
00361	linuron
00367	malathion
00369	maneb
00786	MCPA, dimethylamine salt
00788	MCPA, sodium salt
0106	MCPP, dimethylamine salt
00374	MCPPA
00293	merphos
01697	methamidophos
01689	methidathion
00375	methiocarb
00383	methomyl
00384	methoxychlor
00385	methyl bromide
B0394	methyl paraoxon
00394	methyl parathion
U0016	methyl trithion
01996	metolachlor
01692	metribuzin
B1692	metribuzin DA
00480	mevinphos
00623	mexacarbate
00449	molinate
00408	monuron
00418	naled
00421	napthalene
01728	napropamide
00424	neburon
02019	norflurazon
00396	octyl bicycloheptenedicarboximide
00578	ortho-dichlorobenzene
90683	ortho-dichlorobenzene, other related
01868	oryzalin
01910	oxamyl
00458	paraquat bis(methylsulfate)
00459	parathion
00464	PCNB
00590	pebulate
02008	permethrin
00478	phorate

Chemical Codes (continued)

N0478	phorate sulfone
X0478	phorate sulfoxide
B0478	phoratoxon
D0478	phoratoxon sulfone
C0478	phoratoxon sulfoxide
00479	phosalone
00335	phosmet
00593	picloram
00499	prometon
00502	prometryn
00511	propachlor
00503	propanil
00445	propargite
00504	propazine
00339	propham
00062	propoxur
00506	propylene dichloride (1,2-D)
B0694	propyzamide metabolite
U0018	prothiofos
00517	ronnel
00190	s,s,s-tributyl phosphorotrithioate
U0004	secbumeton
00603	siduron
00530	silvex
00531	simazine
U0005	simetryn
02006	sulprofos
U0013	swep
01810	tebuthiuron
00532	terbacil
U0006	terbuthylazine
01691	terbutryn
00580	terrazole
00305	tetrachlorvinphos
00581	tetradifon
01933	thiobencarb
00594	toxaphene
02133	triadimefon
01619	trichlorobenzene
U0007	trichloronate
00088	trichlorophon
U0022	tricyclazole
00597	trifluralin
01987	vernolate
00622	xylene
00629	ziram

VIII. Sample-Type Codes

Sample-type codes are used to give additional information about chemical analyses CDFA has received. Definitions of terms used (e.g., initial detection sample) are included.

Definitions:

Initial detection sample:
For a single study and one particular well, the initial detection sample for a chemical will be the positive sample with the earliest sampling date and/or time. Split samples and replicate samples are coded in relation to the initial detection sample.

Replicate sample:
A discrete sample taken from the same well as the initial detection sample. In reference to a single chemical, discrete samples taken during a single study will be recorded as replicates of the initial detection sample.

Split sample:
A discrete sample which is divided into subsamples.

Codes:

(I) INITIAL DETECTION SAMPLE, NOT CONFIRMED
- -only one positive analysis
- -method and laboratory may or may not be known
- -no further sampling

(B) INITIAL DETECTION SAMPLE, w/FURTHER QUALITATIVE OR QUANTITATIVE ANALYSES HAVING ALL NEGATIVE RESULTS
- -initial detection with negative subsequent analyses
- -subsequent analyses are assigned the appropriate sample type codes "D" through "L", or "-"

(Q) INITIAL DETECTION SAMPLE, w/ FURTHER ANALYSES
- -initial detection with at least one positive subsequent analysis
- -no qualitative analyses
- -subsequent analyses are assigned the appropriate sample type codes "D" through "L", or "-"

Sample-Type Codes (continued)

(P) INITIAL DETECTION, w/FURTHER QUANTITATIVE AND QUALITATIVE ANALYSES
-indicates that beyond the quantitative values recorded for the initial and subsequent analyses, some qualitative analyses were also performed
-qualitative analyses can be either for the initial or for the subsequent analyses
-at least one positive subsequent analysis
-subsequent analyses are coded with the appropriate sample type codes "D" through "L", or "-"

(H) REPLICATE SAMPLE, METHOD- Different, LAB- Same
-a replicate sample analyzed with a different analytical method(s) but by the same laboratory as the initial detection sample

(J) REPLICATE SAMPLE, METHOD- Different, LAB- Different
-a replicate sample analyzed with a different analytical method(s) and by a different laboratory as the initial detection sample

(K) REPLICATE SAMPLE, METHOD- Same, LAB- Different
-a replicate sample analyzed with the same analytical method(s) but by a different laboratory as the initial detection sample

(L) REPLICATE SAMPLE, METHOD- Same, LAB- Same
-a replicate sample analyzed with the same analytical method(s) and by the same laboratory as the initial detection sample

(-) NOT SPECIFIED
-used when laboratory or analytical methods are unknown for analyses subsequent to initial detection sample
-used when all discrete samples are negative

IX. Analyzing Laboratory Codes

Code	Laboratory Name
1050	California State University, Fresno Lab
1190	Westco Lab
1610	Alpha Analytical Labs
2134	Brown and Caldwell (Pasadena) Lab
2371	Appl, Inc., Lab
3102	Eureka Laboratories, Inc.
3334	North Coast, LTD, Lab
3759	Thorpe Lab
3761	San Bernardino Clinical Lab
4323	California Dept. Food and Agriculture Lab, Sacramento
4417	Orange County Water District Lab
4530	Columbia Analytical Services
4550	ToxScan, Inc.
4704	IT Corporation, Lab
5060	California Dept. Health Services, Berkeley Lab
5091	California Dept. Health Services, Southern Calif. Lab
5106	Orange County
5113	Sequoia Analytical Lab
5117	San Luis Obispo Co. FC&WCD, Lopez Project Lab
5119	Kern County Health Department Lab
5138	Fireman's Fund Insurance Companies, Environmental Lab
5146	California Water Labs
5601	Stone Corral Irrigation District
5664	Central Coast Environmental Lab
5802	Twining, Fresno Lab
5806	B C Lab
5810	Braun, Skaggs, and Kevorkian Lab
5991	Anlab - Dewante and Stowell Lab
6025	Santa Clara Co. Health Dept. - Occ. Health & Safety Lab
6554	Central Coast Analytical, Santa Barbara
7445	Multi-Tech, Inc., Lab
9469	Truesdail Lab
9527	California Analytical Lab
9590	Montgomery, James M., Consulting Engineers Lab

X. Well (Type) Codes

USGS Code	CDFA Code	
	*B =	Both I and D
	*C =	Community well
	*D =	Domestic (private) well (residences)
	F =	Both D and Y
	G =	Both D and R
	H =	D, I, and R
	*I =	Irrigation & agricultural well
	*L =	Large Water System well (more than 200 service connections)
	*M =	Municipal & irrigation well
	*N =	Non-community well (schools, hospitals, restaurants, filling stations, parks, campgrounds) (see Title 22 of the Health and safety code for more detailed definitions)
	*S =	State Small Water System well (less than 200 service connections)
	*T =	Test, monitoring, or observation well
	*U =	Unknown type of well
	*X =	Irrigation and industrial well
	*Y =	Industrial well
(D)	W =	Dewatering well (see USGS definition below)
(C)	( )=	Commercial well (we will include this category in whichever CDFA category it bests fits, for example, industrial or non-community, depending on the described use of the well; see USGS definition below).)
(S)	R =	Stock (see USGS definition below)
(U)	A =	Unused well (see USGS definition below)

* Well types for which there are sampling results in the 1990 data base.

(D) Dewatering means the water is pumped for dewatering a construction or mining site, or to lower the water table for agricultural purposes. In this respect, it differs from a drainage well that is used to drain surface water underground. If the main purpose for which the water is withdrawn is to provide drainage, dewatering should be indicated even though the water may be discharged into an irrigation ditch and subsequently used to irrigate land.

(C) Commercial use refers to use by a business establishment that does not fabricate or produce a product. Filling stations and motels are examples of commercial establishments. If some product is manufactured, assembled, remodeled, or otherwise fabricated, use of water for that plant should be considered industrial, even though the water is not used directly in the product or in the manufacturing of the product.

(S) Stock supply refers to the watering of livestock.

(U) Unused means water is not being removed from the site for one of the purposes described above. A test hole*, oil or gas well, recharge, drainage, observation*, or waste-disposal well will be in this category. * = this type of well will be given the CDFA code of "T"; the others will get a CDFA code of "A".

APPENDIX E

SUMMARY OF WELL STUDIES IN THE 1990 OF THE WELL INVENTORY DATA BASE

I. CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE (CDFA)

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

Study No. 139	atrazine, bromacil, diuron, prometon, & simazine; Stanislaus County; May 1989. 5 wells sampled.
Study No. 141	atrazine, bromacil, diuron, prometon, & simazine; Fresno County; August 1989. 6 wells sampled.
Study No. 143	atrazine, bromacil, diuron, prometon, & simazine; Tehama County; July 1989. 6 wells sampled.
Study No. 144	2,4-D, atrazine, bromacil, diuron, prometon, & simazine; Colusa County; July 1989. 6 wells sampled.
Study No. 145	atrazine, bromacil, diuron, prometon, simazine, & xylene. Sacramento County; August 1989. 5 wells sampled.
Study No. 147	atrazine, bromacil, diuron, prometon, & simazine; Stanislaus County; August 1989. 5 wells sampled.
Study No. 148	atrazine, bromacil, diuron, prometon, & simazine; Stanislaus County; August 1989. 5 wells sampled.
Study No. 149	atrazine, bromacil, diuron, prometon, & simazine; Stanislaus County; August & November 1989. 6 wells sampled.
Study No. 150	atrazine, bromacil, diuron, prometon, simazine, & triazine screen; Fresno County; September 1989. 5 wells sampled.
Study No. 151	atrazine, bromacil, diuron, prometon, simazine, & triazine and urea screen; Fresno County; September 1989. 6 wells sampled.
Study No. 152	atrazine, bromacil, diuron, linuron, monuron, prometon, simazine, & triazine and urea screen; Tulare County; November 1989. 6 wells sampled.
Study No. 153	atrazine, bromacil, diuron, linuron, monuron, prometon, simazine, & triazine and urea screen; Tulare County; September 1989 & February 1990. 7 wells sampled.
Study No. 154	atrazine, bromacil, diuron, linuron, monuron, prometon, simazine, & triazine and urea screen; Tulare County; September 1989 & February 1990. 7 wells sampled.

Study No. 155 atrazine, bromacil, diuron, linuron, monuron, prometon, simazine, & triazine and urea screen; Tulare County; September 1989 & February 1990. 6 wells sampled.

Study No. 156 atrazine, bromacil, diuron, prometon, simazine, & triazine screen; Tulare County; October 1989. 5 wells sampled.

Study No. 157 atrazine, bromacil, diuron, prometon, simazine, & triazine screen; Tulare County; January 1989. 6 wells sampled.

Study No. 158 atrazine, bromacil, diuron, prometon, simazine, & triazine screen; Tulare County; October 1989. 6 wells sampled.

Study No. 159 atrazine, bromacil, diuron, prometon, simazine, & triazine screen; Tulare County; October 1989. 6 wells sampled.

Study No. 160 atrazine, bromacil, diuron, prometon, & simazine; Tulare County; October 1989. 3 wells sampled.

Study No. 161 atrazine, bromacil, diuron, prometon, simazine, & triazine screen; Glenn County; December 1989. 6 wells sampled.

Study No. 162 atrazine, bromacil, diuron, prometon, simazine, & triazine screen; Glenn County; December 1989. 6 wells sampled.

Study No. 163 atrazine, bromacil, diuron, prometon, & simazine; Glenn County; December 1989. 6 wells sampled.

Study No. 164 atrazine, bromacil, diuron, prometon, simazine, & triazine screen; Glenn County; December 1989. 5 wells sampled.

Study No. 168 atrazine, bromacil, diuron, prometon, simazine, & triazine screen; Tehama County; December 1989. 6 wells sampled.

Study No. 169 atrazine, bromacil, diuron, prometon, & simazine; Tehama County; December 1989. 6 wells sampled.

Study No. 170 atrazine, bromacil, diuron, prometon, simazine, & triazine and urea screen; October & December 1989:
Fresno County- 47 wells sampled;
Merced County- 16 wells sampled;
Tehama County- 8 wells sampled;
Tulare County- 29 wells sampled.

Study No. 171 aldicarb, aldicarb sulfone & sulfoxide, atrazine, bromacil, diuron, prometon, simazine, & triazine and urea screen; September & October 1989:
Fresno County- 7 wells sampled;
Kern County- 5 wells sampled;
Kings County- 5 wells sampled;
Madera County- 8 wells sampled;
Merced County- 8 wells sampled;
San Joaquin County- 5 wells sampled;
Solano County- 4 wells sampled;
Tulare County- 4 wells sampled;
Yolo County- 3 wells sampled.

II. CALIFORNIA DEPARTMENT OF HEALTH SERVICES (CDHS)

Agency No. 5060: (Sanitary Engineering Branch)

Study No. 23 AB1803 sampling data (22,445 records). Large & small water systems; 2,095 wells sampled.

Study No. 166 aldicarb; Kern & Kings Counties; October 1989. 12 wells sampled.

III. CALIFORNIA DEPARTMENT OF WATER RESOURCES (DWR)

Agency No. 5050:

Study No. 174 DBCP & EDB; Tulare County; May 1989. 12 wells sampled.

IV. REGIONAL WATER QUALITY CONTROL BOARD (RWQCB)

Agency No. 2894: Region 1 (North Coast)

Study No. 67 fenamiphos; Del Norte County; August & November 1986, & January 1987. 9 wells sampled.

Study No. 140 1,2-D, 1,1,2,2-Tetrachloroethane, & EDB; Del Norte County; October 1985. 15 wells sampled.

Study No. 165 aldicarb, aldicarb sulfone & sulfoxide, phorate, phorate sulfone & sulfoxide, phoratoxon, phoratoxon sulfone & sulfoxide, fenamiphos, & fenamiphos sulfone and sulfoxide; Del Norte County; July 1989. 10 wells sampled.

Agency No. 8493: Region 3 (Central Coast)

Study No. 129 dacthal, nitrates, & various contaminants; Monterey County; November 1988. 3 wells sampled. Test wells & Point source.

Study No. 142 — 61 chemicals analyzed for; Santa Clara & Santa Cruz Counties; May 1989- January 1990. 8 wells sampled. Test wells & Point source.

V. KERN COUNTY HEALTH DEPARTMENT (KCHD)

Agency No. 5119:

Study No. 72 — DBCP & EDB; Kern County; 1987-1988. 215 wells sampled.

VI. SACRAMENTO COUNTY HEATH DEPARTMENT (SCHD)

Agency No. 5108

Study No. 116 — AB1803 chemicals; Sacramento County; June 1985-1987. 131 wells sampled.

VII. U. S. ENVIRONMENTAL PROTECTION AGENCY (U.S. EPA)

Agency No. 8385:

Study No. 173 — National Pesticide Survey: 104 chemicals analyzed for; Los Angeles, Orange, Santa Clara, & San Joaquin Counties; January-October 1989. 6 wells sampled.

APPENDIX F

TABLES ONE THROUGH NINE

Table 1. Numerical highlights contained in the well inventory data base, by year of report.

NUMERICAL HIGHLIGHTS	REPORT YEAR					CUMULATIVE TOTAL
	1986[a]	1987[b]	1988[b]	1989[b]	1990[b]	
Total Analyses	71,109	4,108	39,780	8,096	29,923	144,920
Positive Analyses	5,110	987	336	620	717	7,150
Wells sampled	8,359	524	2,963	749	2,761	13,778[c]
Wells with positive analyses	2,297	179	116	180	163	2,794[c]
Counties sampled	53	18	41	33	52	57[c]
Counties with positive analyses	23	11	14	20	15	32[c]
Pesticides and related compounds sampled	161	77	168	97	192	257[c]
Pesticides and related compounds detected	15	14	10	14	14	32[c]
Pesticide residues resulting from non-point source agricultural use	9	8	1	7	6	12[c]

a The 1986 report included confirmed, non-confirmed and negative detections in the number of wells and counties sampled.

b The number of wells and counties sampled are compiled from confirmed (i.e., two or more positive samples per chemical and well in a single study) and negative analyses only. Non-confirmed positives (i.e., single detections not confirmed by subsequent analyses in a single study) are not included.

c The cumulative total is not additive (e.g., a well with positive analyses reported in the 1986 report with additional positive analyses reported in the 1989 report will only be counted once).

Table 2. Status summary of the fourteen detected pesticides or breakdown products reported by various agencies from July 1, 1989 through June 1, 1990.

Pesticide	Source	Status
aldicarb sulfone	agricultural use	Use of parent compound no longer allowed in counties where detected
aldicarb sulfoxide	agricultural use	Use of parent compound no longer allowed in counties where detected
dibromochloropropane (DBCP)	not applicable[1]	Exempt from the PCPA; use suspended in 1977
simazine	agricultural use; two detections still under investigation	Sections with residues determined to be due to agricultural use will become modified-use PMZ's[2]
bromacil	agricultural use; one detection still under investigation	Sections with residues determined to be due to agricultural use will become modified-use PMZ's
diuron	agricultural use; ten detections still under investigation	Sections with residues determined to be due to agricultural use will become modified-use PMZ's
propylene dichloride (1,2-D)	not applicable	Use as active ingredient discontinued as of 1984
prometon	potential point	CDFA investigation determined not due to agricultural use
atrazine	agricultural use; two detections still under investigation	Sections with residues determined to be due to agricultural use will become no-use PMZ's
ethylene dibromide (EDB)	not applicable	Exempt from the PCPA; use was cancelled in 1985
carbon disulfide	under investigation	Under investigation
toxaphene	not applicable	Exempt from the PCPA; not currently registered for agricultural use
ortho-dichlorobenzene	not applicable	Exempt from the PCPA; not currently registered for agricultural use
monuron	not applicable	Exempt from the PCPA; not currently registered for agricultural use

[1] "Not applicable" means that a source investigation was not conducted because the chemical is no longer registered for agricultural use.

[2] A Pesticide Management Zone (PMZ) is a geographical area of approximately one square-mile which is sensitive to ground water pollution.

Table 3. The number of counties with positive results and the number of counties in which samples were taken, for each pesticide and related chemical. Results are from sampling reported between July 1989 and June 1990.

PESTICIDE	NUMBER OF COUNTIES WITH POSITIVE RESULTS	NUMBER OF COUNTIES SAMPLED
1,1,2,2-tetrachloroethane	0	2
1,2,4-trichlorobenzene	0	9
1,2-dichloropropane, 1,3-D & C-3 compounds	0	4
1,3-dichloropropene	0	23
2,4,5-t	0	11
2,4,6-trichlorophenol	0	9
2,4-D	0	32
2,4-dinitrophenol	0	9
3,5-dichlorobenzoic acid	0	4
3-hydroxycarbofuran	0	4
3-ketocarbofuran phenol	0	4
4(2,4-DB), butoxyethanol ester	0	6
5-hydroxy dicamba	0	4
acenapthene	0	9
acephate	0	15
acrolein	0	1
alachlor	0	14
aldicarb	0	24
aldicarb sulfone	1	14
aldicarb sulfoxide	1	14
aldrin	0	20

Table 3. (continued)

PESTICIDE	NUMBER OF COUNTIES WITH POSITIVE RESULTS	NUMBER OF COUNTIES SAMPLED
ametryne	0	15
aminocarb	0	4
amitrole	0	2
arsenic	0	2
atraton	0	9
atrazine	5	37
atrazine dealkylated	0	4
azinophos-methyl	0	14
barban	0	9
benefin	0	4
benomyl	0	15
bentazon, sodium salt	0	5
bhc (other than gamma isomer)	0	19
bromacil	3	25
butachlor	0	4
butylate	0	4
captan	0	18
carbaryl	0	25
carbendazim	0	1
carbofuran	0	29
carbofuran phenol	0	4
carbon disulfide	1	1
carboxin	0	4
chlordane	0	20

Table 3. (continued)

PESTICIDE	NUMBER OF COUNTIES WITH POSITIVE RESULTS	NUMBER OF COUNTIES SAMPLED
chlordimeform	0	3
chloroneb	0	4
chloropicrin	0	16
chlorothalonil	0	13
chloroxuron	0	5
chlorpropham	0	12
chlorpyrifos	0	18
chlorsulfuron	0	1
chlorthal-dimethyl	0	10
copper	0	3
coumaphos	0	2
cyanazine	0	14
cycloate	0	4
dalapon	0	3
dbcp	4	18
dcpa acid metabolites	0	3
ddd	0	8
dde	0	9
ddt	0	8
ddvp	0	6
demeton	0	11
diazinon	0	29
dicamba	0	11
dichlobenil	0	1

Table 3. (continued)

PESTICIDE	NUMBER OF COUNTIES WITH POSITIVE RESULTS	NUMBER OF COUNTIES SAMPLED
dichlorprop, butoxyethanol ester	0	6
dicofol	0	11
dieldrin	0	18
dimethoate	0	18
dinoseb	0	20
diphenamid	0	9
diquat dibromide	0	1
disulfoton	0	16
diuron	6	34
dnoc, sodium salt	0	6
endosulfan	0	26
endosulfan sulfate	0	22
endothall	0	7
endrin	0	26
endrin aldehyde	0	19
eptc	0	6
ethion	0	11
ethoprop	0	6
ethylene dibromide	1	21
ethylene thiourea	0	8
fenamiphos	0	17
fenamiphos sulfone	0	5
fenamiphos sulfoxide	0	5
fenarimol	0	4

Table 3. (continued)

PESTICIDE	NUMBER OF COUNTIES WITH POSITIVE RESULTS	NUMBER OF COUNTIES SAMPLED
fensulfothion	0	3
fenthion	0	3
fenuron	0	9
fluchloralin	0	3
fluometuron	0	14
fluridone	0	3
formaldehyde	0	1
glyphosate, isopropylamine salt	0	3
heptachlor	0	18
heptachlor epoxide	0	18
hexachlorobenzene	0	13
hexazinone	0	7
lindane (gamma-bhc)	0	26
linuron	0	15
malathion	0	11
maneb	0	8
mcpa, dimethylamine salt	0	5
mcpa, sodium salt	0	1
mcpp, dimethylamine salt	0	1
mcppa	0	3
merphos	0	5
methamidophos	0	10
methidathion	0	5
methiocarb	0	11

Table 3. (continued)

PESTICIDE	NUMBER OF COUNTIES WITH POSITIVE RESULTS	NUMBER OF COUNTIES SAMPLED
methomyl	0	18
methoxychlor	0	16
methyl bromide	0	21
methyl paraoxon	0	3
methyl parathion	0	11
methyl trithion	0	1
metolachlor	0	4
metribuzin	0	11
metribuzin DA	0	1
mevinphos	0	9
mexacarbate	0	4
molinate	0	7
monuron	1	11
naled	0	5
naphthalene	0	10
napropamide	0	6
neburon	0	15
norflurazon	0	4
octyl bicycloheptenedicarboximide	0	4
ortho-dichlorobenzene	1	21
ortho-dichlorobenzene, other related	0	2
oryzalin	0	11
oxamyl	0	18
paraquat bis(methylsulfate)	0	23

Table 3. (continued)

PESTICIDE	NUMBER OF COUNTIES WITH POSITIVE RESULTS	NUMBER OF COUNTIES SAMPLED
parathion	0	20
pcnb	0	5
pebulate	0	4
permethrin	0	7
phorate	0	10
phorate sulfone	0	1
phorate sulfoxide	0	1
phoratoxon	0	1
phoratoxon sulfone	0	1
phoratoxon sulfoxide	0	1
phosalone	0	2
phosmet	0	4
picloram	0	6
prometon	3	23
prometryn	0	20
propachlor	0	4
propanil	0	5
propargite	0	4
propazine	0	15
propham	0	12
propoxur	0	10
propylene dichloride	7	26
propyzamide metabolite	0	4
prothiofos	0	2

Table 3. (continued)

PESTICIDE	NUMBER OF COUNTIES WITH POSITIVE RESULTS	NUMBER OF COUNTIES SAMPLED
ronnel	0	2
s,s,s-tributyl phosphorotrithioate	0	2
secbumeton	0	4
siduron	0	9
silvex	0	21
simazine	6	46
simetryn	0	12
sulprofos	0	1
swep	0	8
tebuthiuron	0	9
terbacil	0	4
terbuthylazine	0	4
terbutryn	0	15
terrazole	0	4
tetrachlorvinphos	0	6
tetradifon	0	4
thiobencarb	0	2
toxaphene	1	25
triadimefon	0	4
trichlorobenzene	0	1
trichloronate	0	2
trichlorophon	0	3
tricyclazole	0	4
trifluralin	0	5

Table 3. (continued)

PESTICIDE	NUMBER OF COUNTIES WITH POSITIVE RESULTS	NUMBER OF COUNTIES SAMPLED
vernolate	0	4
xylene	0	20
ziram	0	7

Table 4. Number of wells sampled and analyses made for each pesticide. Results are from sampling reported between July 1989 and June 1990.

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
1,1,2,2-tetrachloroethane	0	0	17	19	17	19
1,2,4-trichlorobenzene	0	0	70	72	70	72
1,2-dichloropropane, & C-3 comp.	0	0	7	7	7	7
1,3-dichloropropene	0	0	1307	1482	1307	1482
2,4,5-t	0	0	30	31	30	31
2,4,6-trichlorophenol	0	0	72	75	72	75
2,4-D	0	0	323	356	323	356
2,4-dinitrophenol	0	0	70	72	70	72
3,5-dichlorobenzoic acid	0	0	6	6	6	6
3-hydroxycarbofuran	0	0	6	6	6	6
3-ketocarbofuran phenol	0	0	6	6	6	6
4(2,4-DB), butoxyethanol ester	0	0	11	11	11	11
5-hydroxy dicamba	0	0	6	6	6	6
acenapthene	0	0	70	73	70	73
acephate	0	0	210	210	210	210

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
acrolein	0	0	1	1	1	1
alachlor	0	0	237	237	237	237
aldicarb	0	0	456	520	456	520
aldicarb sulfone	7	14	60	111	67	125
aldicarb sulfoxide	8	16	59	112	67	128
aldrin	0	0	180	192	180	192
ametryne	0	0	120	127	120	127
aminocarb	0	0	42	42	42	42
amitrole	0	0	34	34	34	34
arsenic	0	0	2	2	2	2
atraton	0	0	39	39	39	39
atrazine	15	37	864	1081	879	1118
atrazine dealkylated	0	0	5	5	5	5
azinophos-methyl	0	0	184	184	184	184
barban	0	0	53	53	53	53

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
benefin	0	0	51	51	51	51
benomyl	0	0	206	212	206	212
bentazon, sodium salt	0	0	10	10	10	10
bhc (other than gamma isomer)	0	0	182	194	182	194
bromacil	21	46	400	517	421	563
butachlor	0	0	6	6	6	6
butylate	0	0	5	5	5	5
captan	0	0	268	273	268	273
carbaryl	0	0	299	302	299	302
carbendazim	0	0	5	5	5	5
carbofuran	0	0	341	341	341	341
carbofuran phenol	0	0	6	6	6	6
carbon disulfide	1	2	0	0	1	2
carboxin	0	0	6	6	6	6
chlordane	0	0	240	252	240	252

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
chlordimeform	0	0	47	47	47	47
chloroneb	0	0	6	6	6	6
chloropicrin	0	0	271	271	271	271
chlorothalonil	0	0	61	61	61	61
chloroxuron	0	0	21	21	21	21
chlorpropham	0	0	137	138	137	138
chlorpyrifos	0	0	280	282	280	282
chlorsulfuron	0	0	2	2	2	2
chlorthal-dimethyl	0	0	112	112	112	112
copper	0	0	5	5	5	5
coumaphos	0	0	5	5	5	5
cyanazine	0	0	149	156	149	156
cycloate	0	0	5	5	5	5
dalapon	0	0	9	9	9	9
dbcp	48	189	636	882	683	1071

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
dcpa acid metabolites	0	0	4	4	4	4
ddd	0	0	16	16	16	16
dde	0	0	17	17	17	17
ddt	0	0	16	16	16	16
ddvp	0	0	11	11	11	11
demeton	0	0	111	111	111	111
diazinon	0	0	328	337	328	337
dicamba	0	0	40	40	40	40
dichlobenil	0	0	1	1	1	1
dichlorprop, butoxyethanol ester	0	0	11	11	11	11
dicofol	0	0	262	263	262	263
dieldrin	0	0	180	192	180	192
dimethoate	0	0	195	195	195	195
dinoseb	0	0	378	381	378	381
diphenamid	0	0	68	68	68	68

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
diquat dibromide	0	0	4	4	4	4
disulfoton	0	0	187	187	187	187
diuron	40	129	742	863	782	992
dnoc, sodium salt	0	0	64	64	64	64
endosulfan	0	0	417	438	417	438
endosulfan sulfate	0	0	242	254	242	254
endothall	0	0	87	87	87	87
endrin	0	0	271	289	271	289
endrin aldehyde	0	0	181	193	181	193
eptc	0	0	52	52	52	52
ethion	0	0	139	139	139	139
ethoprop	0	0	11	11	11	11
ethylene dibromide	9	27	662	1002	667	1029
ethylene thiourea	0	0	21	21	21	21
fenamiphos	0	0	267	280	267	280

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
fenamiphos sulfone	0	0	16	26	16	26
fenamiphos sulfoxide	0	0	16	26	16	26
fenarimol	0	0	6	6	6	6
fensulfothion	0	0	8	8	8	8
fenthion	0	0	7	7	7	7
fenuron	0	0	55	55	55	55
fluchloralin	0	0	47	47	47	47
fluometuron	0	0	90	90	90	90
fluridone	0	0	4	4	4	4
formaldehyde	0	0	3	3	3	3
glyphosate, isopropylamine salt	0	0	32	32	32	32
heptachlor	0	0	174	186	174	186
heptachlor epoxide	0	0	176	188	176	188
hexachlorobenzene	0	0	77	79	77	79
hexazinone	0	0	50	50	50	50

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
lindane (gamma-bhc)	0	0	273	288	273	288
linuron	0	0	96	109	96	109
malathion	0	0	123	123	123	123
maneb	0	0	75	75	75	75
mcpa, dimethylamine salt	0	0	16	16	16	16
mcpa, sodium salt	0	0	2	2	2	2
mcpp, dimethylamine salt	0	0	3	3	3	3
mcppa	0	0	7	7	7	7
merphos	0	0	52	52	52	52
methamidophos	0	0	188	191	188	191
methidathion	0	0	74	74	74	74
methiocarb	0	0	77	77	77	77
methomyl	0	0	239	240	239	240
methoxychlor	0	0	120	120	120	120
methyl bromide	0	0	1304	1579	1304	1579

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
methyl paraoxon	0	0	5	5	5	5
methyl parathion	0	0	82	82	82	82
methyl trithion	0	0	4	4	4	4
metolachlor	0	0	6	6	6	6
metribuzin	0	0	95	102	95	102
metribuzin DA	0	0	1	1	1	1
mevinphos	0	0	91	91	91	91
mexacarbate	0	0	40	40	40	40
molinate	0	0	19	19	19	19
monuron	3	7	87	96	90	103
naled	0	0	23	23	23	23
naphthalene	0	0	71	73	71	73
napropamide	0	0	53	53	53	53
neburon	0	0	96	96	96	96
norflurazon	0	0	6	6	6	6

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
octyl bicycloheptenedicarboximide	0	0	6	6	6	6
ortho-dichlorobenzene	1	3	1291	1520	1292	1523
ortho-dichlorobenzene, other related	0	0	132	142	132	142
oryzalin	0	0	108	108	108	108
oxamyl	0	0	284	284	284	284
paraquat bis(methylsulfate)	0	0	171	184	171	184
parathion	0	0	324	331	324	331
pcnb	0	0	98	98	98	98
pebulate	0	0	5	5	5	5
permethrin	0	0	56	62	56	62
phorate	0	0	183	193	183	193
phorate sulfone	0	0	10	20	10	20
phorate sulfoxide	0	0	10	19	10	19
phoratoxon	0	0	10	20	10	20
phoratoxon sulfone	0	0	10	19	10	19

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
phoratoxon sulfoxide	0	0	10	19	10	19
phosalone	0	0	15	15	15	15
phosmet	0	0	18	18	18	18
picloram	0	0	19	19	19	19
prometon	5	14	412	629	417	643
prometryn	0	0	274	281	274	281
propachlor	0	0	6	6	6	6
propanil	0	0	7	7	7	7
propargite	0	0	111	111	111	111
propazine	0	0	120	127	120	127
propham	0	0	137	139	137	139
propoxur	0	0	72	72	72	72
propylene dichloride	11	25	1313	1504	1324	1529
propyzamide metabolite	0	0	6	6	6	6
prothiofos	0	0	5	5	5	5

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
ronnel	0	0	5	5	5	5
s,s,s-tributyl phosphorotrithioate	0	0	20	20	20	20
secbumeton	0	0	26	26	26	26
siduron	0	0	63	63	63	63
silvex	0	0	152	158	152	158
simazine	75	206	1117	1242	1192	1450
simetryn	0	0	31	31	31	31
sulprofos	0	0	3	3	3	3
swep	0	0	48	48	48	48
tebuthiuron	0	0	27	27	27	27
terbacil	0	0	6	6	6	6
terbuthylazine	0	0	26	26	26	26
terbutryn	0	0	120	127	120	127
terrazole	0	0	6	6	6	6
tetrachlorvinphos	0	0	11	11	11	11

Table 4. (continued)

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
tetradifon	0	0	116	116	116	116
thiobencarb	0	0	5	5	5	5
toxaphene	1	2	342	362	343	364
triadimefon	0	0	6	6	6	6
trichlorobenzene	0	0	3	3	3	3
trichloronate	0	0	5	5	5	5
trichlorophon	0	0	69	69	69	69
tricyclazole	0	0	6	6	6	6
trifluralin	0	0	10	10	10	10
vernolate	0	0	5	5	5	5
xylene	0	0	1292	1448	1292	1448
ziram	0	0	39	40	39	40
TOTAL RESULTS		718		29204		29923

Table 5. Detection and frequency of analysis of the fourteen detected pesticides by number of positive and total wells, analyses and counties. Results are from sampling reported between July 1989 and June 1990.

PESTICIDE DETECTED	POSITIVE			TOTAL		
	WELLS	ANALYSES	COUNTIES	WELLS	ANALYSES	COUNTIES
aldicarb sulfone	7	14	1	67	125	14
aldicarb sulfoxide	8	16	1	67	128	14
atrazine	15	37	5	879	1,118	37
bromacil	21	46	3	421	563	25
carbon disulfide	1	2	1	1	2	1
dbcp	48	189	4	683	1,071	18
ortho-dichlorobenzene	1	3	1	1,292	1,523	21
diuron	40	129	6	782	992	34
ethylene dibromide	9	27	1	667	1,029	21
monuron	3	7	1	90	103	11
prometon	5	14	3	417	643	23
propylene dichloride	11	25	7	1,324	1,529	26
simazine	75	206	6	1,192	1,450	46
toxaphene	1	2	1	343	364	25

Table 6. Positive, negative and total results for counties in which sampling was reported. Results are from sampling reported between 7/89 and 6/90.

COUNTY	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES	NO. OF WELLS	NO. OF ANALYSES
AMADOR	0	0	2	5	2	5
CALAVERAS	0	0	13	40	13	40
COLUSA	0	0	22	192	22	192
DEL NORTE	8	30	40	360	48	390
EL DORADO	0	0	45	108	45	108
FRESNO	32	105	100	1231	132	1336
GLENN	5	15	44	414	49	429
HUMBOLDT	0	0	45	108	45	108
IMPERIAL	0	0	15	144	15	144
INYO	0	0	9	29	9	29
KERN	35	188	281	3681	316	3869
KINGS	0	0	9	59	9	59
LAKE	0	0	17	22	17	22
LASSEN	0	0	8	32	8	32
LOS ANGELES	0	0	67	1284	67	1284
MADERA	1	2	11	103	12	105
MARIN	0	0	1	2	1	2
MARIPOSA	0	0	13	15	13	15
MENDOCINO	0	0	74	611	74	611
MERCED	0	0	24	192	24	192
MODOC	0	0	6	23	6	23
MONTEREY	0	0	259	2345	259	2345

Table 6. (continued)

COUNTY	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
NAPA	2	4	23	126	25	130
NEVADA	0	0	7	69	7	69
ORANGE	0	0	65	1558	65	1558
PLACER	0	0	34	111	34	111
PLUMAS	0	0	59	204	59	204
RIVERSIDE	0	0	99	1732	99	1732
SACRAMENTO	0	0	134	1773	134	1773
SAN BENITO	0	0	35	67	35	67
SAN BERNARDINO	0	0	104	667	104	667
SAN DIEGO	0	0	21	165	21	165
SAN JOAQUIN	0	0	7	185	7	185
SAN LUIS OBISPO	0	0	45	748	45	748
SAN MATEO	0	0	7	293	7	293
SANTA BARBARA	1	2	51	1068	52	1070
SANTA CLARA	1	4	13	169	14	173
SANTA CRUZ	1	2	3	158	4	160
SHASTA	0	0	43	692	43	692
SIERRA	0	0	11	35	11	35
SISKIYOU	3	6	19	194	22	200
SOLANO	1	3	26	292	27	295
SONOMA	0	0	102	687	102	687
STANISLAUS	9	24	35	259	44	283

Table 6. (continued)

COUNTY	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
SUTTER	0	0	40	205	40	205
TEHAMA	7	28	74	1077	81	1105
TRINITY	0	0	2	12	2	12
TULARE	56	302	222	2737	278	3039
TUOLUMNE	1	3	23	109	24	112
VENTURA	0	0	95	2001	95	2001
YOLO	0	0	58	695	58	695
YUBA	0	0	37	117	37	117
TOTAL	163	718	2599	29205	2762	29923

Table 7. The number of pesticides detected in well water and the total number of pesticides sampled for in each county. Results are from sampling reported between July 1989 and June 1990.

COUNTY	NUMBER OF PESTICIDES DETECTED	NUMBER OF PESTICIDES SAMPLED FOR
AMADOR	0	3
CALAVERAS	0	9
COLUSA	0	30
DEL NORTE	2	29
EL DORADO	0	5
FRESNO	6	37
GLENN	4	27
HUMBOLDT	0	14
IMPERIAL	0	15
INYO	0	8
KERN	4	85
KINGS	0	8
LAKE	0	3
LASSEN	0	10
LOS ANGELES	0	140
MADERA	1	21
MARIN	0	2
MARIPOSA	0	1
MENDOCINO	0	13
MERCED	0	22
MODOC	0	16
MONTEREY	0	105
NAPA	2	32
NEVADA	0	16
ORANGE	0	109
PLACER	0	15
PLUMAS	0	12
RIVERSIDE	0	62
SACRAMENTO	0	39
SAN DIEGO	0	33
SAN BENITO	0	16
SAN BERNARDINO	0	26
SAN JOAQUIN	0	103
SAN LUIS OBISPO	0	81
SAN MATEO	0	49
SANTA BARBARA	1	101
SANTA CLARA	2	106
SANTA CRUZ	1	70
SHASTA	0	52
SIERRA	0	3
SISKIYOU	1	23
SOLANO	1	36
SONOMA	0	27
STANISLAUS	4	15
SUTTER	0	32

Table 7. (continued)

COUNTY	NUMBER OF PESTICIDES DETECTED	NUMBER OF PESTICIDES SAMPLED FOR
TEHAMA	3	44
TRINITY	0	6
TULARE	8	84
TUOLUMNE	1	9
VENTURA	0	36
YOLO	0	36
YUBA	0	12

Table 8. Summary of wells with detected residues by county and pesticide. Results are from sampling reported between July 1989 and June 1990.

COUNTY	1,2-D	aldicarb sulfone	aldicarb sulfoxide	atrazine	bromacil	carbon disulfide	DBCP	ortho-dichloro-benzene	diuron	EDB	monuron	prometon	simazine	toxaphene	Total Discrete Wells
Del Norte		7	8												8
Fresno	1				2		3		5			2	27		32
Glenn				3					1			1	2		5
Kern	3						32		1	9					35
Madera									1						1
Napa	1												1		2
Santa Barbara						1									1
Santa Clara	1													1	1
Santa Cruz	1														1
Siskiyou	3														3
Solano				1											1
Stanislaus				3			1		1				5		9
Tehama				7	1								2		7
Tulare	1			1	18		12		31		3	2	38		56
Tuolumne								1							1
															163
Total per Chemical	11	7	8	15	21	1	48	1	40	9	3	5	75	1	

Table 9. Summary of wells with single sample detections by county and pesticide. Results are from sampling reported between July 1989 and June 1990.

COUNTY	1,2-D	1,3-D	2,4-D	2,4,5-T	aldicarb sulfone	atrazine	benomyl	bromacil	captan	carbaryl	carbon disulfide	DBCP	DCPA acid metabolites	DDD	DDE	DDT	diazinon	diuron	EDB	endrin	methyl bromide	mevinphos	silvex	simazine	toxaphene	xylene	Total Discrete Wells
Del Norte	7	1	2		2																						10
Fresno	1	1						1				1												2		1	6
Glenn							1		2																		2
Kern	8											13							7								22
Lassen																										1	1
Los Angeles						2							1														3
Mono																										1	1
Monterey																	1										1
Napa										1																	1
Orange						1																		1			1
Placer																								1		1	2
Riverside	1																										1
Sacramento																										1	1
San Diego	1																										1
San Joaquin						1																					1
San Luis Obispo				1																		1				1	3
Santa Barbara											1												1				2
Santa Clara	1												1							1					1		2
Santa Cruz	1													1	1	1											2
Solano									1															1			2
Stanislaus												12															12
Tehama								1																			1
Tulare						3		2				11						2						1			19
Tuolumne																					1					1	2
Total # Wells	20	2	2	1	2	7	1	4	3	1	1	37	2	1	1	1	1	2	7	1	1	1	1	6	1	7	

APPENDIX G

RESULTS BY COUNTY AND PESTICIDE

COUNTY: AMADOR

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	2	2	2	2
simazine	0	0	2	2	2	2
simetryn	0	0	1	1	1	1
TOTAL SAMPLE RESULTS		0		5		5

COUNTY: CALAVERAS

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4,5-t	0	0	1	1	1	1
2,4-D	0	0	8	8	8	8
atrazine	0	0	2	2	2	2
diazinon	0	0	1	1	1	1
diquat dibromide	0	0	4	4	4	4
diuron	0	0	10	10	10	10
malathion	0	0	1	1	1	1
simazine	0	0	12	12	12	12
simetryn	0	0	1	1	1	1
TOTAL SAMPLE RESULTS		0		40		40

COUNTY: COLUSA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	15	23	15	23
atrazine	0	0	6	12	6	12
azinophos-methyl	0	0	4	4	4	4
benefin	0	0	4	4	4	4
bentazon, sodium salt	0	0	4	4	4	4
bromacil	0	0	6	12	6	12
carbaryl	0	0	3	3	3	3
carbofuran	0	0	4	4	4	4
diazinon	0	0	4	4	4	4
dimethoate	0	0	4	4	4	4
diphenamid	0	0	4	4	4	4
diuron	0	0	6	12	6	12
ethion	0	0	4	4	4	4
glyphosate, isopropylamine salt	0	0	11	11	11	11
malathion	0	0	4	4	4	4
mcpa, dimethylamine salt	0	0	5	5	5	5
methidathion	0	0	4	4	4	4
methyl parathion	0	0	8	8	8	8
methyl trithion	0	0	4	4	4	4
molinate	0	0	4	4	4	4
paraquat bis(methylsulfate)	0	0	4	4	4	4
parathion	0	0	7	7	7	7
phorate	0	0	4	4	4	4
phosmet	0	0	3	3	3	3
prometon	0	0	10	16	10	16
s,s,s-tributyl phosphorotrithioa	0	0	4	4	4	4
simazine	0	0	6	12	6	12
thiobencarb	0	0	3	3	3	3

COUNTY: COLUSA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
trifluralin	0	0	4	4	4	4
ziram	0	0	1	1	1	1
TOTAL SAMPLE RESULTS		0		192		192

COUNTY: DEL NORTE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,1,2,2-tetrachloroethane	0	0	15	15	15	15
1,3-dichloropropene	0	0	5	5	5	5
2,4-D	0	0	6	6	6	6
aldicarb	0	0	15	25	15	25
aldicarb sulfone	7	14	3	4	10	18
aldicarb sulfoxide	8	16	2	5	10	21
atrazine	0	0	6	6	6	6
chlorothalonil	0	0	3	3	3	3
chlorpyrifos	0	0	3	3	3	3
copper	0	0	3	3	3	3
demeton	0	0	3	3	3	3
endrin	0	0	5	5	5	5
ethylene dibromide	0	0	15	16	15	16
fenamiphos	0	0	19	32	19	32
fenamiphos sulfone	0	0	10	20	10	20
fenamiphos sulfoxide	0	0	10	20	10	20
lindane (gamma-bhc)	0	0	6	6	6	6
methoxychlor	0	0	6	6	6	6
oryzalin	0	0	12	12	12	12
phorate	0	0	15	25	15	25
phorate sulfone	0	0	10	20	10	20
phorate sulfoxide	0	0	10	19	10	19
phoratoxon	0	0	10	20	10	20
phoratoxon sulfone	0	0	10	19	10	19
phoratoxon sulfoxide	0	0	10	19	10	19
propylene dichloride	0	0	13	13	13	13
silvex	0	0	6	7	6	7
simazine	0	0	17	17	17	17
toxaphene	0	0	6	6	6	6
TOTAL SAMPLE RESULTS		30		360		390

COUNTY: EL DORADO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
diazinon	0	0	13	17	13	17
diuron	0	0	13	17	13	17
paraquat bis(methylsulfate)	0	0	13	17	13	17
simazine	0	0	45	56	45	56
simetryn	0	0	1	1	1	1
TOTAL SAMPLE RESULTS		0		108		108

COUNTY: FRESNO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	0	0	0	0
2,4-D	0	0	2	2	2	2
acrolein	0	0	1	1	1	1
alachlor	0	0	41	41	41	41
aldicarb	0	0	48	55	48	55
aldicarb sulfone	0	0	7	14	7	14
aldicarb sulfoxide	0	0	7	14	7	14
aldrin	0	0	1	1	1	1
ametryne	0	0	26	29	26	29
atrazine	0	0	114	175	114	175
bromacil	2	6	70	97	72	103
carbofuran	0	0	42	42	42	42
chloroxuron	0	0	6	6	6	6
cyanazine	0	0	26	29	26	29
dbcp	3	7	40	41	43	48
dinoseb	0	0	42	42	42	42
diuron	5	15	109	142	114	157
endrin	0	0	2	2	2	2
ethylene dibromide	0	0	54	58	54	58
fenuron	0	0	6	6	6	6
fluometuron	0	0	6	6	6	6
lindane (gamma-bhc)	0	0	2	2	2	2
linuron	0	0	6	6	6	6
methoxychlor	0	0	2	2	2	2
metribuzin	0	0	26	29	26	29
monuron	0	0	6	6	6	6
neburon	0	0	6	6	6	6
oxamyl	0	0	42	42	42	42

COUNTY: FRESNO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
prometon	2	5	70	128	72	133
prometryn	0	0	26	29	26	29
propazine	0	0	26	29	26	29
propylene dichloride	1	3	0	0	1	3
siduron	0	0	6	6	6	6
silvex	0	0	2	2	2	2
simazine	27	69	87	104	114	173
tebuthiuron	0	0	6	6	6	6
terbutryn	0	0	26	29	26	29
toxaphene	0	0	2	2	2	2
xylene	0	0	0	0	0	0
TOTAL SAMPLE RESULTS		105		1231		1336

COUNTY: GLENN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	22	27	22	27
acephate	0	0	2	2	2	2
ametryne	0	0	4	5	4	5
atrazine	3	7	45	59	48	66
benomyl	0	0	19	24	19	24
bromacil	0	0	23	25	23	25
captan	0	0	11	15	11	15
carbaryl	0	0	9	9	9	9
carbofuran	0	0	6	6	6	6
chlorpyrifos	0	0	9	10	9	10
cyanazine	0	0	4	5	4	5
diazinon	0	0	1	1	1	1
dimethoate	0	0	5	5	5	5
diuron	1	2	28	30	29	32
endosulfan	0	0	4	4	4	4
ethylene dibromide	0	0	1	2	1	2
methomyl	0	0	13	14	13	14
metribuzin	0	0	4	5	4	5
oxamyl	0	0	3	3	3	3
paraquat bis(methylsulfate)	0	0	21	27	21	27
parathion	0	0	22	28	22	28
prometon	1	2	26	30	27	32
prometryn	0	0	4	5	4	5
propazine	0	0	4	5	4	5
simazine	2	4	47	62	49	66
terbutryn	0	0	4	5	4	5
toxaphene	0	0	1	1	1	1
TOTAL SAMPLE RESULTS		15		414		429

COUNTY: HUMBOLDT

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	12	14	12	14
aldicarb	0	0	1	1	1	1
amitrole	0	0	5	5	5	5
atrazine	0	0	6	6	6	6
dicamba	0	0	1	1	1	1
dinoseb	0	0	1	1	1	1
endrin	0	0	7	10	7	10
fenamiphos	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	7	10	7	10
methoxychlor	0	0	4	4	4	4
oryzalin	0	0	2	2	2	2
silvex	0	0	7	9	7	9
simazine	0	0	40	40	40	40
toxaphene	0	0	4	4	4	4
TOTAL SAMPLE RESULTS		0		108		108

COUNTY: IMPERIAL

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	15	15	15	15
acephate	0	0	7	7	7	7
carbofuran	0	0	7	7	7	7
chlorpyrifos	0	0	7	7	7	7
diazinon	0	0	7	7	7	7
dimethoate	0	0	7	7	7	7
disulfoton	0	0	7	7	7	7
endosulfan	0	0	7	7	7	7
maneb	0	0	7	7	7	7
methyl bromide	0	0	15	15	15	15
ortho-dichlorobenzene	0	0	15	15	15	15
parathion	0	0	7	7	7	7
prometryn	0	0	7	7	7	7
propylene dichloride	0	0	14	14	14	14
xylene	0	0	15	15	15	15
TOTAL SAMPLE RESULTS		0		144		144

COUNTY: INYO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	1	1	1	1
carbofuran	0	0	6	6	6	6
diazinon	0	0	2	2	2	2
dimethoate	0	0	4	4	4	4
diuron	0	0	5	5	5	5
hexazinone	0	0	6	6	6	6
methomyl	0	0	1	1	1	1
methyl parathion	0	0	4	4	4	4
TOTAL SAMPLE RESULTS		0		29		29

COUNTY: KERN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,2,4-trichlorobenzene	0	0	42	44	42	44
1,3-dichloropropene	0	0	77	104	77	104
2,4,6-trichlorophenol	0	0	41	43	41	43
2,4-dinitrophenol	0	0	41	43	41	43
acenapthene	0	0	41	43	41	43
acephate	0	0	41	41	41	41
aldicarb	0	0	24	31	24	31
aldicarb sulfone	0	0	5	10	5	10
aldicarb sulfoxide	0	0	5	10	5	10
aldrin	0	0	2	3	2	3
arsenic	0	0	1	1	1	1
atrazine	0	0	7	7	7	7
azinophos-methyl	0	0	41	41	41	41
benefin	0	0	40	40	40	40

COUNTY: KERN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
benomyl	0	0	40	40	40	40
bhc (other than gamma isomer)	0	0	2	3	2	3
bromacil	0	0	45	45	45	45
carbaryl	0	0	40	40	40	40
carbofuran	0	0	40	40	40	40
chlordane	0	0	2	3	2	3
chlordimeform	0	0	40	40	40	40
chloropicrin	0	0	39	39	39	39
chloroxuron	0	0	2	2	2	2
chlorpropham	0	0	40	40	40	40
chlorpyrifos	0	0	41	41	41	41
copper	0	0	1	1	1	1
cyanazine	0	0	2	2	2	2
dbcp	32	151	209	438	241	589
demeton	0	0	41	41	41	41
diazinon	0	0	4	4	4	4
dicofol	0	0	45	46	45	46
dieldrin	0	0	2	3	2	3
dimethoate	0	0	41	41	41	41
dinoseb	0	0	40	40	40	40
diphenamid	0	0	40	40	40	40
disulfoton	0	0	41	41	41	41
diuron	1	2	44	46	45	48
dnoc, sodium salt	0	0	40	40	40	40
endosulfan	0	0	2	3	2	3
endosulfan sulfate	0	0	2	3	2	3
endothall	0	0	48	48	48	48
endrin	0	0	2	3	2	3

COUNTY: KERN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
endrin aldehyde	0	0	2	3	2	3
eptc	0	0	40	40	40	40
ethion	0	0	41	41	41	41
ethylene dibromide	9	27	243	578	252	605
fenamiphos	0	0	41	41	41	41
fenuron	0	0	2	2	2	2
fluchloralin	0	0	40	40	40	40
fluometuron	0	0	2	2	2	2
heptachlor	0	0	2	3	2	3
heptachlor epoxide	0	0	2	3	2	3
hexachlorobenzene	0	0	41	43	41	43
lindane (gamma-bhc)	0	0	2	3	2	3
linuron	0	0	2	2	2	2
malathion	0	0	41	41	41	41
merphos	0	0	40	40	40	40
methamidophos	0	0	41	41	41	41
methidathion	0	0	41	41	41	41
methomyl	0	0	40	40	40	40
methyl bromide	0	0	80	142	80	142
mevinphos	0	0	41	41	41	41
monuron	0	0	2	2	2	2
naphthalene	0	0	41	43	41	43
napropamide	0	0	40	40	40	40
neburon	0	0	2	2	2	2
ortho-dichlorobenzene	0	0	80	147	80	147
oryzalin	0	0	40	40	40	40
oxamyl	0	0	40	40	40	40
parathion	0	0	42	42	42	42

COUNTY: KERN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
permethrin	0	0	40	40	40	40
phorate	0	0	41	41	41	41
prometon	0	0	43	43	43	43
prometryn	0	0	2	2	2	2
propargite	0	0	40	40	40	40
propham	0	0	40	40	40	40
propylene dichloride	3	8	72	97	75	105
siduron	0	0	2	2	2	2
simazine	0	0	7	7	7	7
tebuthiuron	0	0	2	2	2	2
tetradifon	0	0	40	40	40	40
toxaphene	0	0	2	3	2	3
trichlorophon	0	0	41	41	41	41
xylene	0	0	77	104	77	104
ziram	0	0	1	2	1	2
TOTAL SAMPLE RESULTS		188		3681		3869

COUNTY: KINGS

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
aldicarb	0	0	9	14	9	14
aldicarb sulfone	0	0	5	10	5	10
aldicarb sulfoxide	0	0	5	10	5	10
atrazine	0	0	5	5	5	5
bromacil	0	0	5	5	5	5
diuron	0	0	5	5	5	5
prometon	0	0	5	5	5	5
simazine	0	0	5	5	5	5
TOTAL SAMPLE RESULTS		0		59		59

COUNTY: LAKE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
carbofuran	0	0	3	3	3	3
diazinon	0	0	3	3	3	3
simazine	0	0	16	16	16	16
TOTAL SAMPLE RESULTS		0		22		22

COUNTY: LASSEN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	6	7	6	7
chloropicrin	0	0	1	1	1	1
endrin	0	0	3	3	3	3
ethylene dibromide	0	0	3	5	3	5
lindane (gamma-bhc)	0	0	3	3	3	3
methoxychlor	0	0	3	3	3	3
paraquat bis(methylsulfate)	0	0	1	2	1	2
silvex	0	0	3	3	3	3
simazine	0	0	1	2	1	2
toxaphene	0	0	3	3	3	3
xylene	0	0	0	0	0	0
TOTAL SAMPLE RESULTS		0		32		32

COUNTY: LOS ANGELES

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,2,4-trichlorobenzene	0	0	1	1	1	1
1,3-dichloropropene	0	0	59	83	59	83
2,4,5-t	0	0	3	3	3	3
2,4,6-trichlorophenol	0	0	1	1	1	1
2,4-D	0	0	3	3	3	3
2,4-dinitrophenol	0	0	1	1	1	1
3,5-dichlorobenzoic acid	0	0	3	3	3	3
3-hydroxycarbofuran	0	0	3	3	3	3
3-ketocarbofuran phenol	0	0	3	3	3	3
4(2,4-DB), butoxyethanol ester	0	0	3	3	3	3
5-hydroxy dicamba	0	0	3	3	3	3
acenapthene	0	0	1	1	1	1
acephate	0	0	22	22	22	22
alachlor	0	0	3	3	3	3

COUNTY: LOS ANGELES

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
aldicarb	0	0	3	3	3	3
aldicarb sulfone	0	0	3	3	3	3
aldicarb sulfoxide	0	0	3	3	3	3
aldrin	0	0	4	4	4	4
ametryne	0	0	3	3	3	3
atraton	0	0	3	3	3	3
atrazine	0	0	28	28	28	28
atrazine dealkylated	0	0	2	2	2	2
azinophos-methyl	0	0	22	22	22	22
barban	0	0	3	3	3	3
benefin	0	0	1	1	1	1
benomyl	0	0	1	1	1	1
bentazon, sodium salt	0	0	3	3	3	3
bhc (other than gamma isomer)	0	0	4	4	4	4
bromacil	0	0	4	4	4	4
butachlor	0	0	3	3	3	3
butylate	0	0	2	2	2	2
captan	0	0	1	1	1	1
carbaryl	0	0	4	4	4	4
carbofuran	0	0	4	4	4	4
carbofuran phenol	0	0	3	3	3	3
carboxin	0	0	3	3	3	3
chlordane	0	0	4	4	4	4
chlordimeform	0	0	1	1	1	1
chloroneb	0	0	3	3	3	3
chloropicrin	0	0	22	22	22	22
chlorothalonil	0	0	3	3	3	3
chlorpropham	0	0	4	5	4	5

COUNTY: LOS ANGELES

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
chlorpyrifos	0	0	22	22	22	22
chlorthal-dimethyl	0	0	3	3	3	3
cyanazine	0	0	26	26	26	26
cycloate	0	0	2	2	2	2
dbcp	0	0	25	25	25	25
dcpa acid metabolites	0	0	2	2	2	2
ddd	0	0	3	3	3	3
dde	0	0	3	3	3	3
ddt	0	0	3	3	3	3
ddvp	0	0	3	3	3	3
demeton	0	0	22	22	22	22
dicamba	0	0	3	3	3	3
dichlorprop, butoxyethanol ester	0	0	3	3	3	3
dicofol	0	0	22	22	22	22
dieldrin	0	0	4	4	4	4
dimethoate	0	0	22	22	22	22
dinoseb	0	0	4	4	4	4
diphenamid	0	0	4	4	4	4
disulfoton	0	0	22	22	22	22
diuron	0	0	4	4	4	4
dnoc, sodium salt	0	0	1	1	1	1
endosulfan	0	0	1	1	1	1
endosulfan sulfate	0	0	4	4	4	4
endothall	0	0	1	1	1	1
endrin	0	0	4	4	4	4
endrin aldehyde	0	0	4	4	4	4
eptc	0	0	4	4	4	4
ethion	0	0	22	22	22	22

COUNTY: LOS ANGELES

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
ethoprop	0	0	3	3	3	3
ethylene dibromide	0	0	26	26	26	26
ethylene thiourea	0	0	3	3	3	3
fenamiphos	0	0	25	25	25	25
fenamiphos sulfone	0	0	3	3	3	3
fenamiphos sulfoxide	0	0	3	3	3	3
fenarimol	0	0	3	3	3	3
fluchloralin	0	0	1	1	1	1
fluometuron	0	0	3	3	3	3
fluridone	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
hexazinone	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	4	4	4	4
linuron	0	0	3	3	3	3
malathion	0	0	22	22	22	22
merphos	0	0	1	1	1	1
methamidophos	0	0	22	22	22	22
methidathion	0	0	22	22	22	22
methiocarb	0	0	3	3	3	3
methomyl	0	0	4	4	4	4
methoxychlor	0	0	3	3	3	3
methyl bromide	0	0	57	100	57	100
methyl paraoxon	0	0	3	3	3	3
metolachlor	0	0	3	3	3	3
metribuzin	0	0	3	3	3	3
mevinphos	0	0	25	25	25	25

COUNTY: LOS ANGELES

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
molinate	0	0	5	5	5	5
naphthalene	0	0	1	1	1	1
napropamide	0	0	4	4	4	4
neburon	0	0	3	3	3	3
norflurazon	0	0	3	3	3	3
octyl bicycloheptenedicarboximid	0	0	3	3	3	3
ortho-dichlorobenzene	0	0	56	79	56	79
oryzalin	0	0	1	1	1	1
oxamyl	0	0	4	4	4	4
paraquat bis(methylsulfate)	0	0	1	1	1	1
parathion	0	0	22	22	22	22
pebulate	0	0	2	2	2	2
permethrin	0	0	4	7	4	7
phorate	0	0	21	21	21	21
picloram	0	0	3	3	3	3
prometon	0	0	4	4	4	4
prometryn	0	0	26	26	26	26
propachlor	0	0	3	3	3	3
propanil	0	0	3	3	3	3
propargite	0	0	1	1	1	1
propazine	0	0	3	3	3	3
propham	0	0	4	4	4	4
propoxur	0	0	3	3	3	3
propylene dichloride	0	0	59	81	59	81
propyzamide metabolite	0	0	3	3	3	3
silvex	0	0	3	3	3	3
simazine	0	0	31	31	31	31
simetryn	0	0	3	3	3	3

COUNTY: LOS ANGELES

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
swep	0	0	3	3	3	3
tebuthiuron	0	0	3	3	3	3
terbacil	0	0	3	3	3	3
terbutryn	0	0	3	3	3	3
terrazole	0	0	3	3	3	3
tetrachlorvinphos	0	0	3	3	3	3
tetradifon	0	0	1	1	1	1
toxaphene	0	0	1	1	1	1
triadimefon	0	0	3	3	3	3
trichlorophon	0	0	22	22	22	22
tricyclazole	0	0	3	3	3	3
trifluralin	0	0	3	3	3	3
vernolate	0	0	2	2	2	2
xylene	0	0	56	78	56	78
TOTAL SAMPLE RESULTS		0		1284		1284

COUNTY: MADERA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
aldicarb	0	0	8	16	8	16
aldicarb sulfone	0	0	8	16	8	16
aldicarb sulfoxide	0	0	8	16	8	16
aldrin	0	0	1	1	1	1
atrazine	0	0	8	8	8	8
benomyl	0	0	1	1	1	1
bromacil	0	0	8	8	8	8
chloroxuron	0	0	1	1	1	1
diuron	1	2	7	7	8	9
endosulfan sulfate	0	0	1	1	1	1
endrin	0	0	3	3	3	3
endrin aldehyde	0	0	2	2	2	2
fenuron	0	0	1	1	1	1
fluometuron	0	0	1	1	1	1
linuron	0	0	1	1	1	1
monuron	0	0	1	1	1	1
neburon	0	0	1	1	1	1
prometon	0	0	8	8	8	8
siduron	0	0	1	1	1	1
simazine	0	0	8	8	8	8
tebuthiuron	0	0	1	1	1	1
TOTAL SAMPLE RESULTS		2		103		105

COUNTY: MARIN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	1	1	1	1
diazinon	0	0	1	1	1	1
TOTAL SAMPLE RESULTS		0		2		2

COUNTY: MARIPOSA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
simazine	0	0	13	15	13	15
TOTAL SAMPLE RESULTS		0		15		15

COUNTY: MENDOCINO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	37	45	37	45
atrazine	0	0	28	28	28	28
azinophos-methyl	0	0	54	54	54	54
captan	0	0	55	55	55	55
chlordane	0	0	55	55	55	55
dicofol	0	0	55	55	55	55
endosulfan	0	0	55	56	55	56
endosulfan sulfate	0	0	55	55	55	55
methyl bromide	0	0	37	45	37	45
ortho-dichlorobenzene	0	0	37	45	37	45
propylene dichloride	0	0	37	45	37	45
simazine	0	0	28	28	28	28
xylene	0	0	37	45	37	45
TOTAL SAMPLE RESULTS		0		611		611

COUNTY: MERCED

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
aldicarb	0	0	8	16	8	16
aldicarb sulfone	0	0	8	16	8	16
aldicarb sulfoxide	0	0	8	16	8	16
ametryne	0	0	1	1	1	1
atrazine	0	0	24	26	24	26
bromacil	0	0	24	26	24	26
chloroxuron	0	0	1	1	1	1
cyanazine	0	0	1	1	1	1
diuron	0	0	24	26	24	26
fenuron	0	0	1	1	1	1
fluometuron	0	0	1	1	1	1
linuron	0	0	1	1	1	1
metribuzin	0	0	1	1	1	1
monuron	0	0	1	1	1	1
neburon	0	0	1	1	1	1
prometon	0	0	24	26	24	26
prometryn	0	0	1	1	1	1
propazine	0	0	1	1	1	1
siduron	0	0	1	1	1	1
simazine	0	0	24	26	24	26
tebuthiuron	0	0	1	1	1	1
terbutryn	0	0	1	1	1	1
TOTAL SAMPLE RESULTS		0		192		192

COUNTY: MODOC

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	3	3	3	3
aldicarb	0	0	1	1	1	1
atrazine	0	0	1	1	1	1
bromacil	0	0	1	1	1	1
carbofuran	0	0	2	2	2	2
dinoseb	0	0	1	1	1	1
endrin	0	0	1	1	1	1
ethylene dibromide	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	1	1	1	1
maneb	0	0	1	1	1	1
paraquat bis(methylsulfate)	0	0	1	1	1	1
parathion	0	0	1	1	1	1
prometon	0	0	1	2	1	2
propylene dichloride	0	0	1	1	1	1
silvex	0	0	1	1	1	1
simazine	0	0	4	4	4	4
TOTAL SAMPLE RESULTS		0		23		23

COUNTY: MONTEREY

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,2,4-trichlorobenzene	0	0	3	3	3	3
1,3-dichloropropene	0	0	251	255	251	255
2,4,5-t	0	0	3	3	3	3
2,4,6-trichlorophenol	0	0	5	6	5	6
2,4-D	0	0	28	28	28	28
2,4-dinitrophenol	0	0	3	3	3	3
4(2,4-DB), butoxyethanol ester	0	0	3	3	3	3
acenapthene	0	0	5	6	5	6
acephate	0	0	19	19	19	19
alachlor	0	0	1	1	1	1
aldicarb	0	0	28	28	28	28
aldrin	0	0	9	10	9	10
aminocarb	0	0	3	3	3	3
atrazine	0	0	7	7	7	7
azinophos-methyl	0	0	3	3	3	3
barban	0	0	3	3	3	3
benomyl	0	0	37	37	37	37
bhc (other than gamma isomer)	0	0	9	10	9	10
bromacil	0	0	1	1	1	1
captan	0	0	49	49	49	49
carbaryl	0	0	17	17	17	17
carbofuran	0	0	7	7	7	7
chlordane	0	0	9	10	9	10
chloropicrin	0	0	35	35	35	35
chlorothalonil	0	0	16	16	16	16
chlorpropham	0	0	3	3	3	3
chlorpyrifos	0	0	12	12	12	12
chlorthal-dimethyl	0	0	4	4	4	4

COUNTY: MONTEREY

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
coumaphos	0	0	3	3	3	3
cyanazine	0	0	4	4	4	4
dalapon	0	0	3	3	3	3
dbcp	0	0	1	3	1	3
ddd	0	0	3	3	3	3
dde	0	0	3	3	3	3
ddt	0	0	3	3	3	3
ddvp	0	0	3	3	3	3
demeton	0	0	3	3	3	3
diazinon	0	0	80	81	80	81
dicamba	0	0	3	3	3	3
dichlorprop, butoxyethanol ester	0	0	3	3	3	3
dicofol	0	0	33	33	33	33
dieldrin	0	0	8	9	8	9
dimethoate	0	0	24	24	24	24
dinoseb	0	0	33	33	33	33
diphenamid	0	0	1	1	1	1
disulfoton	0	0	28	28	28	28
diuron	0	0	32	32	32	32
dnoc, sodium salt	0	0	1	1	1	1
endosulfan	0	0	68	69	68	69
endosulfan sulfate	0	0	8	9	8	9
endothall	0	0	4	4	4	4
endrin	0	0	9	10	9	10
endrin aldehyde	0	0	8	9	8	9
ethoprop	0	0	3	3	3	3
ethylene dibromide	0	0	7	7	7	7
ethylene thiourea	0	0	1	1	1	1

COUNTY: MONTEREY

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
fenamiphos	0	0	1	1	1	1
fensulfothion	0	0	3	3	3	3
fenthion	0	0	3	3	3	3
fenuron	0	0	3	3	3	3
fluometuron	0	0	3	3	3	3
heptachlor	0	0	8	9	8	9
heptachlor epoxide	0	0	8	9	8	9
hexachlorobenzene	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	9	10	9	10
linuron	0	0	3	3	3	3
maneb	0	0	24	24	24	24
mcpa, dimethylamine salt	0	0	3	3	3	3
mcpp, dimethylamine salt	0	0	3	3	3	3
merphos	0	0	3	3	3	3
methamidophos	0	0	13	13	13	13
methiocarb	0	0	3	3	3	3
methomyl	0	0	63	63	63	63
methoxychlor	0	0	3	3	3	3
methyl bromide	0	0	250	291	250	291
methyl parathion	0	0	10	10	10	10
mevinphos	0	0	13	13	13	13
mexacarbate	0	0	3	3	3	3
monuron	0	0	3	3	3	3
naled	0	0	3	3	3	3
naphthalene	0	0	3	3	3	3
neburon	0	0	3	3	3	3
ortho-dichlorobenzene	0	0	251	258	251	258
oryzalin	0	0	1	1	1	1

COUNTY: MONTEREY

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
oxamyl	0	0	7	7	7	7
paraquat bis(methylsulfate)	0	0	13	13	13	13
parathion	0	0	25	25	25	25
pcnb	0	0	1	1	1	1
phorate	0	0	7	7	7	7
prometryn	0	0	4	4	4	4
propham	0	0	3	3	3	3
propoxur	0	0	3	3	3	3
propylene dichloride	0	0	251	254	251	254
prothiofos	0	0	3	3	3	3
ronnel	0	0	3	3	3	3
siduron	0	0	3	3	3	3
silvex	0	0	3	3	3	3
simazine	0	0	18	18	18	18
sulprofos	0	0	3	3	3	3
swep	0	0	3	3	3	3
tetrachlorvinphos	0	0	3	3	3	3
toxaphene	0	0	8	11	8	11
trichloronate	0	0	3	3	3	3
xylene	0	0	251	254	251	254
ziram	0	0	1	1	1	1
TOTAL SAMPLE RESULTS		0		2345		2345

COUNTY: NAPA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
acephate	0	0	1	1	1	1
atrazine	0	0	2	2	2	2
barban	0	0	1	1	1	1
benomyl	0	0	1	1	1	1
captan	0	0	3	3	3	3
carbaryl	0	0	5	6	5	6
carbendazim	0	0	5	5	5	5
carbofuran	0	0	1	1	1	1
chlorpropham	0	0	1	1	1	1
chlorpyrifos	0	0	1	1	1	1
diazinon	0	0	4	4	4	4
dicofol	0	0	1	1	1	1
dimethoate	0	0	8	8	8	8
diuron	0	0	13	13	13	13
ethylene thiourea	0	0	5	5	5	5
fenamiphos	0	0	1	1	1	1
fenthion	0	0	2	2	2	2
glyphosate, isopropylamine salt	0	0	19	19	19	19
linuron	0	0	1	1	1	1
maneb	0	0	5	5	5	5
methiocarb	0	0	1	1	1	1
methomyl	0	0	2	2	2	2
monuron	0	0	1	1	1	1
naled	0	0	2	2	2	2
neburon	0	0	1	1	1	1
oryzalin	0	0	9	9	9	9
oxamyl	0	0	1	1	1	1
paraquat bis(methylsulfate)	0	0	7	7	7	7

COUNTY: NAPA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
pcnb	0	0	2	2	2	2
propham	0	0	1	1	1	1
propylene dichloride	1	2	0	0	1	2
simazine	1	2	18	18	19	20
TOTAL SAMPLE RESULTS		4		126		130

COUNTY: NEVADA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	6	6	6	6
aldrin	0	0	4	4	4	4
atrazine	0	0	6	6	6	6
bhc (other than gamma isomer)	0	0	4	4	4	4
chlordane	0	0	4	4	4	4
diazinon	0	0	5	5	5	5
dieldrin	0	0	4	4	4	4
endosulfan	0	0	4	4	4	4
endosulfan sulfate	0	0	3	3	3	3
endrin	0	0	4	4	4	4
endrin aldehyde	0	0	3	3	3	3
heptachlor	0	0	4	4	4	4
heptachlor epoxide	0	0	4	4	4	4
lindane (gamma-bhc)	0	0	4	4	4	4
simazine	0	0	6	6	6	6
toxaphene	0	0	4	4	4	4
TOTAL SAMPLE RESULTS		0		69		69

COUNTY: ORANGE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	55	68	55	68
2,4,5-t	0	0	1	1	1	1
2,4-D	0	0	1	1	1	1
3,5-dichlorobenzoic acid	0	0	1	1	1	1
3-hydroxycarbofuran	0	0	1	1	1	1
3-ketocarbofuran phenol	0	0	1	1	1	1
4(2,4-DB), butoxyethanol ester	0	0	1	1	1	1
5-hydroxy dicamba	0	0	1	1	1	1
alachlor	0	0	1	1	1	1
aldicarb	0	0	44	44	44	44
aldicarb sulfone	0	0	1	1	1	1
aldicarb sulfoxide	0	0	1	1	1	1
aldrin	0	0	58	59	58	59
ametryne	0	0	1	1	1	1
atraton	0	0	1	1	1	1
atrazine	0	0	43	43	43	43
atrazine dealkylated	0	0	1	1	1	1
barban	0	0	1	1	1	1
bentazon, sodium salt	0	0	1	1	1	1
bhc (other than gamma isomer)	0	0	58	59	58	59
bromacil	0	0	1	1	1	1
butachlor	0	0	1	1	1	1
butylate	0	0	1	1	1	1
carbaryl	0	0	1	1	1	1
carbofuran	0	0	1	1	1	1
carbofuran phenol	0	0	1	1	1	1
carboxin	0	0	1	1	1	1
chlordane	0	0	58	59	58	59

COUNTY: ORANGE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
chloroneb	0	0	1	1	1	1
chloropicrin	0	0	43	43	43	43
chlorothalonil	0	0	1	1	1	1
chlorpropham	0	0	1	1	1	1
chlorthal-dimethyl	0	0	1	1	1	1
cyanazine	0	0	1	1	1	1
cycloate	0	0	1	1	1	1
dbcp	0	0	44	44	44	44
dcpa acid metabolites	0	0	1	1	1	1
ddd	0	0	1	1	1	1
dde	0	0	1	1	1	1
ddt	0	0	1	1	1	1
ddvp	0	0	1	1	1	1
demeton	0	0	1	1	1	1
dicamba	0	0	1	1	1	1
dichlorprop, butoxyethanol ester	0	0	1	1	1	1
dieldrin	0	0	58	59	58	59
dinoseb	0	0	44	44	44	44
diphenamid	0	0	1	1	1	1
diuron	0	0	43	43	43	43
endosulfan	0	0	57	58	57	58
endosulfan sulfate	0	0	58	59	58	59
endrin	0	0	58	59	58	59
endrin aldehyde	0	0	58	59	58	59
eptc	0	0	1	1	1	1
ethoprop	0	0	1	1	1	1
ethylene dibromide	0	0	44	44	44	44
ethylene thiourea	0	0	1	1	1	1

COUNTY: ORANGE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
fenamiphos	0	0	1	1	1	1
fenamiphos sulfone	0	0	1	1	1	1
fenamiphos sulfoxide	0	0	1	1	1	1
fenarimol	0	0	1	1	1	1
fluometuron	0	0	1	1	1	1
heptachlor	0	0	58	59	58	59
heptachlor epoxide	0	0	58	59	58	59
hexachlorobenzene	0	0	1	1	1	1
hexazinone	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	58	59	58	59
linuron	0	0	1	1	1	1
methiocarb	0	0	1	1	1	1
methomyl	0	0	1	1	1	1
methoxychlor	0	0	1	1	1	1
methyl bromide	0	0	54	66	54	66
metolachlor	0	0	1	1	1	1
metribuzin	0	0	1	1	1	1
metribuzin DA	0	0	1	1	1	1
mevinphos	0	0	1	1	1	1
molinate	0	0	1	1	1	1
napropamide	0	0	1	1	1	1
neburon	0	0	1	1	1	1
norflurazon	0	0	1	1	1	1
octyl bicycloheptenedicarboximid	0	0	1	1	1	1
ortho-dichlorobenzene	0	0	54	66	54	66
oxamyl	0	0	44	44	44	44
pebulate	0	0	1	1	1	1
permethrin	0	0	1	2	1	2

COUNTY: ORANGE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
picloram	0	0	1	1	1	1
prometon	0	0	44	44	44	44
prometryn	0	0	1	1	1	1
propachlor	0	0	1	1	1	1
propanil	0	0	1	1	1	1
propazine	0	0	1	1	1	1
propham	0	0	1	1	1	1
propoxur	0	0	1	1	1	1
propylene dichloride	0	0	55	67	55	67
propyzamide metabolite	0	0	1	1	1	1
silvex	0	0	1	1	1	1
simazine	0	0	43	43	43	43
simetryn	0	0	1	1	1	1
swep	0	0	1	1	1	1
tebuthiuron	0	0	1	1	1	1
terbacil	0	0	1	1	1	1
terbutryn	0	0	1	1	1	1
terrazole	0	0	1	1	1	1
tetrachlorvinphos	0	0	1	1	1	1
toxaphene	0	0	57	58	57	58
triadimefon	0	0	1	1	1	1
tricyclazole	0	0	1	1	1	1
trifluralin	0	0	1	1	1	1
vernolate	0	0	1	1	1	1
xylene	0	0	54	66	54	66
TOTAL SAMPLE RESULTS		0		1558		1558

COUNTY: PLACER

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	13	13	13	13
2,4-D	0	0	7	8	7	8
atrazine	0	0	1	1	1	1
azinophos-methyl	0	0	4	4	4	4
diazinon	0	0	5	5	5	5
diuron	0	0	4	4	4	4
endosulfan	0	0	4	4	4	4
methyl bromide	0	0	13	13	13	13
molinate	0	0	2	2	2	2
ortho-dichlorobenzene	0	0	13	13	13	13
paraquat bis(methylsulfate)	0	0	1	1	1	1
propylene dichloride	0	0	13	13	13	13
silvex	0	0	1	1	1	1
simazine	0	0	16	16	16	16
xylene	0	0	13	13	13	13
TOTAL SAMPLE RESULTS		0		111		111

COUNTY: PLUMAS

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	46	46	46	46
amitrole	0	0	29	29	29	29
carbaryl	0	0	7	7	7	7
carbofuran	0	0	3	3	3	3
chlorpyrifos	0	0	34	34	34	34
dicamba	0	0	9	9	9	9
dimethoate	0	0	3	3	3	3
fensulfothion	0	0	3	3	3	3
hexazinone	0	0	37	37	37	37
paraquat bis(methylsulfate)	0	0	3	3	3	3
silvex	0	0	3	3	3	3
simazine	0	0	27	27	27	27
TOTAL SAMPLE RESULTS		0		204		204

COUNTY: RIVERSIDE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,2,4-trichlorobenzene	0	0	11	11	11	11
1,3-dichloropropene	0	0	97	123	97	123
2,4,6-trichlorophenol	0	0	11	11	11	11
2,4-dinitrophenol	0	0	11	11	11	11
acenapthene	0	0	11	11	11	11
acephate	0	0	8	8	8	8
alachlor	0	0	44	44	44	44
aldicarb	0	0	44	44	44	44
aldrin	0	0	22	30	22	30
atrazine	0	0	44	44	44	44
benomyl	0	0	8	8	8	8
bhc (other than gamma isomer)	0	0	21	29	21	29
bromacil	0	0	8	8	8	8
captan	0	0	8	8	8	8
carbaryl	0	0	8	8	8	8
carbofuran	0	0	44	44	44	44
chlordane	0	0	21	29	21	29
chloropicrin	0	0	8	8	8	8
chlorothalonil	0	0	8	8	8	8
chlorpyrifos	0	0	8	8	8	8
chlorthal-dimethyl	0	0	8	8	8	8
cyanazine	0	0	8	8	8	8
dbcp	0	0	42	42	42	42
diazinon	0	0	8	8	8	8
dicofol	0	0	8	8	8	8
dieldrin	0	0	21	29	21	29
dimethoate	0	0	8	8	8	8
dinoseb	0	0	44	44	44	44

COUNTY: RIVERSIDE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
diphenamid	0	0	8	8	8	8
disulfoton	0	0	8	8	8	8
diuron	0	0	44	44	44	44
dnoc, sodium salt	0	0	8	8	8	8
endosulfan	0	0	21	37	21	37
endosulfan sulfate	0	0	21	29	21	29
endothall	0	0	8	8	8	8
endrin	0	0	21	29	21	29
endrin aldehyde	0	0	21	29	21	29
ethylene dibromide	0	0	44	44	44	44
ethylene thiourea	0	0	8	8	8	8
fenamiphos	0	0	8	8	8	8
heptachlor	0	0	21	29	21	29
heptachlor epoxide	0	0	21	29	21	29
hexachlorobenzene	0	0	11	11	11	11
lindane (gamma-bhc)	0	0	21	29	21	29
maneb	0	0	8	8	8	8
methamidophos	0	0	8	8	8	8
methomyl	0	0	8	8	8	8
methyl bromide	0	0	98	124	98	124
naphthalene	0	0	11	11	11	11
ortho-dichlorobenzene	0	0	98	127	98	127
oryzalin	0	0	8	8	8	8
oxamyl	0	0	44	44	44	44
paraquat bis(methylsulfate)	0	0	8	8	8	8
parathion	0	0	8	8	8	8
pcnb	0	0	8	8	8	8
phorate	0	0	8	8	8	8

COUNTY: RIVERSIDE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
prometryn	0	0	8	8	8	8
propylene dichloride	0	0	98	149	98	149
simazine	0	0	44	44	44	44
toxaphene	0	0	21	29	21	29
xylene	0	0	98	116	98	116
ziram	0	0	8	8	8	8
TOTAL SAMPLE RESULTS		0		1732		1732

COUNTY: SACRAMENTO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	130	138	130	138
2,4,6-trichlorophenol	0	0	3	3	3	3
2,4-D	0	0	59	59	59	59
2,4-dinitrophenol	0	0	3	3	3	3
aldicarb	0	0	59	59	59	59
aldrin	0	0	3	3	3	3
atrazine	0	0	64	69	64	69
bhc (other than gamma isomer)	0	0	3	3	3	3
bromacil	0	0	5	10	5	10
chlordane	0	0	3	3	3	3
ddd	0	0	3	3	3	3
dde	0	0	3	3	3	3
ddt	0	0	3	3	3	3
dieldrin	0	0	3	3	3	3

COUNTY: SACRAMENTO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
diuron	0	0	64	69	64	69
endosulfan	0	0	3	3	3	3
endosulfan sulfate	0	0	3	3	3	3
endrin	0	0	62	62	62	62
endrin aldehyde	0	0	3	3	3	3
ethylene dibromide	0	0	59	59	59	59
fenamiphos	0	0	59	59	59	59
heptachlor	0	0	3	3	3	3
heptachlor epoxide	0	0	3	3	3	3
hexachlorobenzene	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	62	62	62	62
methoxychlor	0	0	59	59	59	59
methyl bromide	0	0	130	138	130	138
naphthalene	0	0	3	3	3	3
ortho-dichlorobenzene	0	0	130	141	130	141
ortho-dichlorobenzene, other rel	0	0	130	138	130	138
parathion	0	0	59	59	59	59
phorate	0	0	59	59	59	59
prometon	0	0	5	10	5	10
propylene dichloride	0	0	130	138	130	138
silvex	0	0	59	59	59	59
simazine	0	0	64	69	64	69
toxaphene	0	0	62	62	62	62
trichlorobenzene	0	0	3	3	3	3
xylene	0	0	130	144	130	144
TOTAL SAMPLE RESULTS		0		1773		1773

COUNTY: SAN BENITO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
acephate	0	0	1	1	1	1
benomyl	0	0	1	1	1	1
captan	0	0	1	1	1	1
carbaryl	0	0	4	5	4	5
chloropicrin	0	0	1	1	1	1
chlorothalonil	0	0	1	1	1	1
diazinon	0	0	5	5	5	5
dimethoate	0	0	1	1	1	1
disulfoton	0	0	2	2	2	2
endosulfan	0	0	2	2	2	2
fenamiphos	0	0	1	1	1	1
methamidophos	0	0	1	1	1	1
mevinphos	0	0	1	1	1	1
paraquat bis(methylsulfate)	0	0	4	4	4	4
parathion	0	0	1	1	1	1
simazine	0	0	32	39	32	39
TOTAL SAMPLE RESULTS		0		67		67

COUNTY: SAN BERNARDINO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	99	122	99	122
2,4,5-t	0	0	1	1	1	1
2,4-D	0	0	2	2	2	2
ametryne	0	0	2	2	2	2
atraton	0	0	1	1	1	1
atrazine	0	0	6	6	6	6
carbofuran	0	0	2	2	2	2
dbcp	0	0	5	8	5	8
dinoseb	0	0	5	5	5	5
diuron	0	0	4	4	4	4
endosulfan	0	0	1	1	1	1
endosulfan sulfate	0	0	1	1	1	1
ethylene dibromide	0	0	2	2	2	2
methyl bromide	0	0	100	123	100	123
ortho-dichlorobenzene	0	0	100	122	100	122
oxamyl	0	0	1	1	1	1
prometon	0	0	1	1	1	1
prometryn	0	0	2	2	2	2
propazine	0	0	2	2	2	2
propylene dichloride	0	0	99	122	99	122
secbumeton	0	0	2	2	2	2
simazine	0	0	7	7	7	7
simetryn	0	0	2	2	2	2
terbuthylazine	0	0	2	2	2	2
terbutryn	0	0	2	2	2	2
xylene	0	0	99	122	99	122
TOTAL SAMPLE RESULTS		0		667		667

COUNTY: SAN DIEGO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4,5-t	0	0	1	1	1	1
2,4-D	0	0	1	1	1	1
aldrin	0	0	8	8	8	8
azinophos-methyl	0	0	1	1	1	1
bhc (other than gamma isomer)	0	0	8	8	8	8
captan	0	0	10	10	10	10
carbaryl	0	0	14	14	14	14
chlordane	0	0	8	8	8	8
chlorothalonil	0	0	1	1	1	1
dbcp	0	0	3	3	3	3
demeton	0	0	1	1	1	1
diazinon	0	0	12	13	12	13
dicamba	0	0	1	1	1	1
dieldrin	0	0	8	8	8	8
dinoseb	0	0	1	1	1	1
disulfoton	0	0	1	1	1	1
endosulfan	0	0	8	8	8	8
endosulfan sulfate	0	0	8	8	8	8
endrin	0	0	8	8	8	8
endrin aldehyde	0	0	8	8	8	8
ethion	0	0	1	1	1	1
heptachlor	0	0	7	7	7	7
heptachlor epoxide	0	0	7	7	7	7
lindane (gamma-bhc)	0	0	8	8	8	8
malathion	0	0	1	1	1	1
mcpa, dimethylamine salt	0	0	1	1	1	1
mcppa	0	0	1	1	1	1
methyl parathion	0	0	1	1	1	1

COUNTY: SAN DIEGO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
paraquat bis(methylsulfate)	0	0	14	14	14	14
parathion	0	0	1	1	1	1
propylene dichloride	0	0	0	0	0	0
silvex	0	0	1	1	1	1
simazine	0	0	7	7	7	7
toxaphene	0	0	3	3	3	3
TOTAL SAMPLE RESULTS		0		165		165

COUNTY: SAN JOAQUIN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	1	2	1	2
2,4,5-t	0	0	1	1	1	1
2,4-D	0	0	1	1	1	1
3,5-dichlorobenzoic acid	0	0	1	1	1	1
3-hydroxycarbofuran	0	0	1	1	1	1
3-ketocarbofuran phenol	0	0	1	1	1	1
4(2,4-DB), butoxyethanol ester	0	0	1	1	1	1
5-hydroxy dicamba	0	0	1	1	1	1
alachlor	0	0	1	1	1	1
aldicarb	0	0	6	11	6	11
aldicarb sulfone	0	0	6	11	6	11
aldicarb sulfoxide	0	0	6	11	6	11
aldrin	0	0	1	1	1	1
ametryne	0	0	2	3	2	3

COUNTY: SAN JOAQUIN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
atraton	0	0	1	1	1	1
atrazine	0	0	6	9	6	9
atrazine dealkylated	0	0	1	1	1	1
barban	0	0	1	1	1	1
bentazon, sodium salt	0	0	1	1	1	1
bhc (other than gamma isomer)	0	0	1	1	1	1
bromacil	0	0	6	7	6	7
butachlor	0	0	1	1	1	1
butylate	0	0	1	1	1	1
carbaryl	0	0	1	1	1	1
carbofuran	0	0	1	1	1	1
carbofuran phenol	0	0	1	1	1	1
carboxin	0	0	1	1	1	1
chlordane	0	0	1	1	1	1
chloroneb	0	0	1	1	1	1
chlorothalonil	0	0	1	1	1	1
chlorpropham	0	0	1	1	1	1
chlorthal-dimethyl	0	0	1	1	1	1
cyanazine	0	0	2	3	2	3
cycloate	0	0	1	1	1	1
dbcp	0	0	2	2	2	2
dcpa acid metabolites	0	0	1	1	1	1
ddd	0	0	1	1	1	1
dde	0	0	1	1	1	1
ddt	0	0	1	1	1	1
ddvp	0	0	1	1	1	1
dicamba	0	0	1	1	1	1
dichlorprop, butoxyethanol ester	0	0	1	1	1	1

COUNTY: SAN JOAQUIN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
dieldrin	0	0	1	1	1	1
dinoseb	0	0	1	1	1	1
diphenamid	0	0	1	1	1	1
diuron	0	0	6	7	6	7
endosulfan sulfate	0	0	1	1	1	1
endrin	0	0	1	1	1	1
endrin aldehyde	0	0	1	1	1	1
eptc	0	0	1	1	1	1
ethoprop	0	0	1	1	1	1
ethylene dibromide	0	0	1	1	1	1
ethylene thiourea	0	0	1	1	1	1
fenamiphos	0	0	1	1	1	1
fenamiphos sulfone	0	0	1	1	1	1
fenamiphos sulfoxide	0	0	1	1	1	1
fenarimol	0	0	1	1	1	1
fluometuron	0	0	1	1	1	1
fluridone	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
hexazinone	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	1	1	1	1
linuron	0	0	1	1	1	1
methiocarb	0	0	1	1	1	1
methomyl	0	0	1	1	1	1
methoxychlor	0	0	1	1	1	1
methyl paraoxon	0	0	1	1	1	1
metolachlor	0	0	1	1	1	1

COUNTY: SAN JOAQUIN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
metribuzin	0	0	2	3	2	3
mevinphos	0	0	1	1	1	1
molinate	0	0	1	1	1	1
napropamide	0	0	1	1	1	1
neburon	0	0	1	1	1	1
norflurazon	0	0	1	1	1	1
octyl bicycloheptenedicarboximid	0	0	1	1	1	1
oxamyl	0	0	1	1	1	1
pebulate	0	0	1	1	1	1
permethrin	0	0	1	2	1	2
picloram	0	0	1	1	1	1
prometon	0	0	6	9	6	9
prometryn	0	0	2	3	2	3
propachlor	0	0	1	1	1	1
propanil	0	0	1	1	1	1
propazine	0	0	2	3	2	3
propham	0	0	1	1	1	1
propoxur	0	0	1	1	1	1
propylene dichloride	0	0	1	1	1	1
propyzamide metabolite	0	0	1	1	1	1
silvex	0	0	1	1	1	1
simazine	0	0	7	10	7	10
simetryn	0	0	1	1	1	1
swep	0	0	1	1	1	1
tebuthiuron	0	0	1	1	1	1
terbacil	0	0	1	1	1	1
terbutryn	0	0	2	3	2	3
terrazole	0	0	1	1	1	1

COUNTY: SAN JOAQUIN

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
tetrachlorvinphos	0	0	1	1	1	1
triadimefon	0	0	1	1	1	1
tricyclazole	0	0	1	1	1	1
trifluralin	0	0	1	1	1	1
vernolate	0	0	1	1	1	1
TOTAL SAMPLE RESULTS		0		185		185

COUNTY: SAN LUIS OBISPO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,2,4-trichlorobenzene	0	0	2	2	2	2
1,2-dichloropropane, 1,3-dichlor	0	0	3	3	3	3
1,3-dichloropropene	0	0	18	20	18	20
2,4,5-t	0	0	12	13	12	13
2,4-D	0	0	17	17	17	17
acenapthene	0	0	1	1	1	1
acephate	0	0	5	5	5	5
alachlor	0	0	3	3	3	3
aldicarb	0	0	1	1	1	1
aldrin	0	0	4	4	4	4
ametryne	0	0	6	6	6	6
aminocarb	0	0	14	14	14	14
atraton	0	0	6	6	6	6
atrazine	0	0	6	6	6	6

COUNTY: SAN LUIS OBISPO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
azinophos-methyl	0	0	12	12	12	12
barban	0	0	14	14	14	14
bhc (other than gamma isomer)	0	0	6	6	6	6
carbaryl	0	0	14	14	14	14
carbofuran	0	0	17	17	17	17
chlordane	0	0	6	6	6	6
chloropicrin	0	0	3	3	3	3
chlorothalonil	0	0	3	3	3	3
chlorpropham	0	0	14	14	14	14
chlorpyrifos	0	0	3	3	3	3
chlorsulfuron	0	0	2	2	2	2
chlorthal-dimethyl	0	0	1	1	1	1
dbcp	0	0	11	11	11	11
dde	0	0	1	1	1	1
demeton	0	0	13	13	13	13
diazinon	0	0	12	12	12	12
dicofol	0	0	3	3	3	3
dieldrin	0	0	6	6	6	6
dimethoate	0	0	9	9	9	9
disulfoton	0	0	16	16	16	16
diuron	0	0	13	13	13	13
endosulfan	0	0	11	11	11	11
endosulfan sulfate	0	0	8	8	8	8
endrin	0	0	6	6	6	6
endrin aldehyde	0	0	6	6	6	6
ethion	0	0	12	12	12	12
ethylene dibromide	0	0	10	10	10	10
fenamiphos	0	0	9	9	9	9

COUNTY: SAN LUIS OBISPO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
fenuron	0	0	14	14	14	14
fluometuron	0	0	14	14	14	14
heptachlor	0	0	4	4	4	4
heptachlor epoxide	0	0	6	6	6	6
hexachlorobenzene	0	0	1	1	1	1
hexazinone	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	7	7	7	7
linuron	0	0	14	14	14	14
malathion	0	0	12	12	12	12
methiocarb	0	0	14	14	14	14
methomyl	0	0	16	16	16	16
methoxychlor	0	0	7	7	7	7
methyl bromide	0	0	18	20	18	20
methyl parathion	0	0	12	12	12	12
mexacarbate	0	0	13	13	13	13
monuron	0	0	14	14	14	14
naphthalene	0	0	1	1	1	1
neburon	0	0	14	14	14	14
ortho-dichlorobenzene	0	0	18	21	18	21
oxamyl	0	0	14	14	14	14
paraquat bis(methylsulfate)	0	0	1	1	1	1
parathion	0	0	12	12	12	12
permethrin	0	0	3	3	3	3
prometon	0	0	6	6	6	6
prometryn	0	0	6	6	6	6
propazine	0	0	6	6	6	6
propham	0	0	14	14	14	14
propoxur	0	0	14	14	14	14

COUNTY: SAN LUIS OBISPO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
propylene dichloride	0	0	18	20	18	20
secbumeton	0	0	6	6	6	6
siduron	0	0	14	14	14	14
silvex	0	0	17	17	17	17
simazine	0	0	8	8	8	8
swep	0	0	14	14	14	14
terbuthylazine	0	0	6	6	6	6
terbutryn	0	0	6	6	6	6
toxaphene	0	0	9	9	9	9
xylene	0	0	18	20	18	20
ziram	0	0	5	5	5	5
TOTAL SAMPLE RESULTS		0		748		748

COUNTY: SAN MATEO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
aldrin	0	0	3	3	3	3
ametryne	0	0	7	7	7	7
aminocarb	0	0	7	7	7	7
atraton	0	0	7	7	7	7
atrazine	0	0	7	7	7	7
azinophos-methyl	0	0	7	7	7	7
barban	0	0	7	7	7	7
bhc (other than gamma isomer)	0	0	3	3	3	3
carbaryl	0	0	7	7	7	7
carbofuran	0	0	7	7	7	7
chlordane	0	0	3	3	3	3
chlorpropham	0	0	7	7	7	7
demeton	0	0	7	7	7	7
diazinon	0	0	7	7	7	7
dieldrin	0	0	3	3	3	3
disulfoton	0	0	7	7	7	7
diuron	0	0	7	7	7	7
endosulfan	0	0	3	3	3	3
endosulfan sulfate	0	0	3	3	3	3
endrin	0	0	3	3	3	3
endrin aldehyde	0	0	3	3	3	3
ethion	0	0	7	7	7	7
fenuron	0	0	7	7	7	7
fluometuron	0	0	7	7	7	7
heptachlor	0	0	2	2	2	2
heptachlor epoxide	0	0	2	2	2	2
lindane (gamma-bhc)	0	0	3	3	3	3
linuron	0	0	7	7	7	7

COUNTY: SAN MATEO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
malathion	0	0	7	7	7	7
methiocarb	0	0	7	7	7	7
methomyl	0	0	7	7	7	7
methyl parathion	0	0	7	7	7	7
mexacarbate	0	0	7	7	7	7
monuron	0	0	7	7	7	7
neburon	0	0	7	7	7	7
oxamyl	0	0	7	7	7	7
prometon	0	0	7	7	7	7
prometryn	0	0	7	7	7	7
propazine	0	0	7	7	7	7
propham	0	0	7	7	7	7
propoxur	0	0	7	7	7	7
secbumeton	0	0	7	7	7	7
siduron	0	0	7	7	7	7
simazine	0	0	7	7	7	7
simetryn	0	0	7	7	7	7
swep	0	0	7	7	7	7
terbuthylazine	0	0	7	7	7	7
terbutryn	0	0	7	7	7	7
toxaphene	0	0	3	3	3	3
TOTAL SAMPLE RESULTS		0		293		293

COUNTY: SANTA BARBARA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,2-dichloropropane, 1,3-dichlor	0	0	1	1	1	1
2,4,5-t	0	0	4	4	4	4
2,4-D	0	0	34	38	34	38
acephate	0	0	7	7	7	7
alachlor	0	0	6	6	6	6
aldicarb	0	0	13	13	13	13
aldrin	0	0	4	4	4	4
ametryne	0	0	11	11	11	11
aminocarb	0	0	18	18	18	18
atraton	0	0	11	11	11	11
atrazine	0	0	15	15	15	15
azinophos-methyl	0	0	10	10	10	10
barban	0	0	22	22	22	22
benefin	0	0	6	6	6	6
benomyl	0	0	5	5	5	5
bhc (other than gamma isomer)	0	0	4	4	4	4
bromacil	0	0	7	7	7	7
captan	0	0	6	6	6	6
carbaryl	0	0	28	28	28	28
carbofuran	0	0	27	27	27	27
carbon disulfide	1	2	0	0	1	2
chlordane	0	0	4	4	4	4
chlordimeform	0	0	6	6	6	6
chloropicrin	0	0	6	6	6	6
chlorothalonil	0	0	6	6	6	6
chlorpropham	0	0	27	27	27	27
chlorpyrifos	0	0	6	6	6	6
chlorthal-dimethyl	0	0	6	6	6	6

COUNTY: SANTA BARBARA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
cyanazine	0	0	4	4	4	4
dalapon	0	0	4	4	4	4
dbcp	0	0	20	20	20	20
ddd	0	0	2	2	2	2
dde	0	0	2	2	2	2
ddt	0	0	2	2	2	2
demeton	0	0	10	10	10	10
diazinon	0	0	12	12	12	12
dicamba	0	0	4	4	4	4
dieldrin	0	0	4	4	4	4
dimethoate	0	0	7	7	7	7
dinoseb	0	0	12	13	12	13
diphenamid	0	0	8	8	8	8
disulfoton	0	0	11	11	11	11
diuron	0	0	35	35	35	35
dnoc, sodium salt	0	0	6	6	6	6
endosulfan	0	0	8	8	8	8
endosulfan sulfate	0	0	4	4	4	4
endothall	0	0	6	6	6	6
endrin	0	0	4	4	4	4
endrin aldehyde	0	0	4	4	4	4
eptc	0	0	5	5	5	5
ethion	0	0	10	10	10	10
ethylene dibromide	0	0	10	10	10	10
fenamiphos	0	0	6	6	6	6
fenuron	0	0	18	18	18	18
fluchloralin	0	0	6	6	6	6
fluometuron	0	0	17	17	17	17

COUNTY: SANTA BARBARA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
heptachlor	0	0	4	4	4	4
heptachlor epoxide	0	0	4	4	4	4
lindane (gamma-bhc)	0	0	11	11	11	11
linuron	0	0	22	22	22	22
malathion	0	0	10	10	10	10
maneb	0	0	4	4	4	4
mcpa, dimethylamine salt	0	0	4	4	4	4
mcppa	0	0	4	4	4	4
merphos	0	0	6	6	6	6
methamidophos	0	0	6	6	6	6
methidathion	0	0	6	6	6	6
methiocarb	0	0	22	22	22	22
methomyl	0	0	27	27	27	27
methoxychlor	0	0	8	8	8	8
methyl bromide	0	0	5	5	5	5
methyl parathion	0	0	4	4	4	4
mevinphos	0	0	6	6	6	6
mexacarbate	0	0	17	17	17	17
monuron	0	0	22	22	22	22
napropamide	0	0	6	6	6	6
neburon	0	0	22	22	22	22
oryzalin	0	0	6	6	6	6
oxamyl	0	0	27	27	27	27
paraquat bis(methylsulfate)	0	0	9	9	9	9
parathion	0	0	11	11	11	11
permethrin	0	0	6	6	6	6
phorate	0	0	6	6	6	6
prometon	0	0	11	11	11	11

COUNTY: SANTA BARBARA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
prometryn	0	0	16	16	16	16
propargite	0	0	6	6	6	6
propazine	0	0	11	11	11	11
propham	0	0	27	27	27	27
propoxur	0	0	18	18	18	18
secbumeton	0	0	11	11	11	11
siduron	0	0	18	18	18	18
silvex	0	0	25	28	25	28
simazine	0	0	28	28	28	28
simetryn	0	0	4	4	4	4
swep	0	0	18	18	18	18
terbuthylazine	0	0	11	11	11	11
terbutryn	0	0	11	11	11	11
tetradifon	0	0	6	6	6	6
toxaphene	0	0	3	3	3	3
trichlorophon	0	0	6	6	6	6
ziram	0	0	4	4	4	4
TOTAL SAMPLE RESULTS		2		1068		1070

COUNTY: SANTA CLARA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	9	11	9	11
2,4,5-t	0	0	1	1	1	1
2,4-D	0	0	1	1	1	1
3,5-dichlorobenzoic acid	0	0	1	1	1	1
3-hydroxycarbofuran	0	0	1	1	1	1
3-ketocarbofuran phenol	0	0	1	1	1	1
4(2,4-DB), butoxyethanol ester	0	0	1	1	1	1
5-hydroxy dicamba	0	0	1	1	1	1
alachlor	0	0	1	1	1	1
aldicarb	0	0	1	1	1	1
aldicarb sulfone	0	0	1	1	1	1
aldicarb sulfoxide	0	0	1	1	1	1
aldrin	0	0	1	1	1	1
ametryne	0	0	1	1	1	1
atraton	0	0	1	1	1	1
atrazine	0	0	1	1	1	1
atrazine dealkylated	0	0	1	1	1	1
barban	0	0	1	1	1	1
bentazon, sodium salt	0	0	1	1	1	1
bhc (other than gamma isomer)	0	0	1	1	1	1
bromacil	0	0	1	1	1	1
butachlor	0	0	1	1	1	1
butylate	0	0	1	1	1	1
carbaryl	0	0	1	1	1	1
carbofuran	0	0	1	1	1	1
carbofuran phenol	0	0	1	1	1	1
carboxin	0	0	1	1	1	1
chlordane	0	0	1	1	1	1

COUNTY: SANTA CLARA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
chloroneb	0	0	1	1	1	1
chlorothalonil	0	0	1	1	1	1
chlorpropham	0	0	1	1	1	1
chlorthal-dimethyl	0	0	1	1	1	1
cyanazine	0	0	1	1	1	1
cycloate	0	0	1	1	1	1
dbcp	0	0	1	1	1	1
dcpa acid metabolites	0	0	0	0	0	0
ddd	0	0	1	1	1	1
dde	0	0	1	1	1	1
ddt	0	0	1	1	1	1
ddvp	0	0	1	1	1	1
dicamba	0	0	1	1	1	1
dichlorprop, butoxyethanol ester	0	0	1	1	1	1
dieldrin	0	0	1	1	1	1
dinoseb	0	0	1	1	1	1
diphenamid	0	0	1	1	1	1
diuron	0	0	1	1	1	1
endosulfan sulfate	0	0	1	1	1	1
endrin	0	0	6	9	6	9
endrin aldehyde	0	0	1	1	1	1
eptc	0	0	1	1	1	1
ethoprop	0	0	1	1	1	1
ethylene dibromide	0	0	1	1	1	1
ethylene thiourea	0	0	1	1	1	1
fenamiphos	0	0	1	1	1	1
fenamiphos sulfone	0	0	1	1	1	1
fenamiphos sulfoxide	0	0	1	1	1	1

COUNTY: SANTA CLARA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
fenarimol	0	0	1	1	1	1
fluometuron	0	0	1	1	1	1
fluridone	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
hexazinone	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	1	1	1	1
linuron	0	0	1	1	1	1
methiocarb	0	0	1	1	1	1
methomyl	0	0	1	1	1	1
methoxychlor	0	0	1	1	1	1
methyl bromide	0	0	8	9	8	9
methyl paraoxon	0	0	1	1	1	1
metolachlor	0	0	1	1	1	1
metribuzin	0	0	1	1	1	1
mevinphos	0	0	1	1	1	1
molinate	0	0	1	1	1	1
napropamide	0	0	1	1	1	1
neburon	0	0	1	1	1	1
norflurazon	0	0	1	1	1	1
octyl bicycloheptenedicarboximid	0	0	1	1	1	1
ortho-dichlorobenzene	0	0	8	9	8	9
oxamyl	0	0	1	1	1	1
pebulate	0	0	1	1	1	1
permethrin	0	0	1	2	1	2
picloram	0	0	1	1	1	1
prometon	0	0	1	1	1	1

COUNTY: SANTA CLARA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
prometryn	0	0	1	1	1	1
propachlor	0	0	1	1	1	1
propanil	0	0	1	1	1	1
propazine	0	0	1	1	1	1
propham	0	0	1	1	1	1
propoxur	0	0	1	1	1	1
propylene dichloride	1	2	13	16	14	18
propyzamide metabolite	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
swep	0	0	1	1	1	1
tebuthiuron	0	0	1	1	1	1
terbacil	0	0	1	1	1	1
terbutryn	0	0	1	1	1	1
terrazole	0	0	1	1	1	1
tetrachlorvinphos	0	0	1	1	1	1
toxaphene	1	2	4	6	5	8
triadimefon	0	0	1	1	1	1
tricyclazole	0	0	1	1	1	1
trifluralin	0	0	1	1	1	1
vernolate	0	0	1	1	1	1
xylene	0	0	8	9	8	9
TOTAL SAMPLE RESULTS		4		169		173

COUNTY: SANTA CRUZ

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,1,2,2-tetrachloroethane	0	0	2	4	2	4
1,3-dichloropropene	0	0	2	2	2	2
2,4,5-t	0	0	2	2	2	2
2,4-D	0	0	2	2	2	2
4(2,4-DB), butoxyethanol ester	0	0	2	2	2	2
acephate	0	0	1	1	1	1
alachlor	0	0	1	1	1	1
aldicarb	0	0	3	3	3	3
aldicarb sulfone	0	0	2	2	2	2
aldicarb sulfoxide	0	0	2	2	2	2
aldrin	0	0	3	3	3	3
azinophos-methyl	0	0	2	2	2	2
bhc (other than gamma isomer)	0	0	3	3	3	3
captan	0	0	1	1	1	1
carbaryl	0	0	3	3	3	3
carbofuran	0	0	2	2	2	2
chlordane	0	0	3	3	3	3
chlorothalonil	0	0	1	1	1	1
chlorpyrifos	0	0	2	2	2	2
coumaphos	0	0	2	2	2	2
dalapon	0	0	2	2	2	2
ddd	0	0	2	2	2	2
dde	0	0	2	2	2	2
ddt	0	0	2	2	2	2
ddvp	0	0	2	2	2	2
demeton	0	0	2	2	2	2
diazinon	0	0	2	2	2	2
dicamba	0	0	2	2	2	2

COUNTY: SANTA CRUZ

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
dichlorprop, butoxyethanol ester	0	0	2	2	2	2
dicofol	0	0	1	1	1	1
dieldrin	0	0	3	3	3	3
dimethoate	0	0	1	1	1	1
dinoseb	0	0	3	3	3	3
disulfoton	0	0	2	2	2	2
endosulfan	0	0	4	4	4	4
endosulfan sulfate	0	0	3	3	3	3
endrin	0	0	3	3	3	3
endrin aldehyde	0	0	3	3	3	3
ethoprop	0	0	2	2	2	2
ethylene thiourea	0	0	1	1	1	1
fensulfothion	0	0	2	2	2	2
fenthion	0	0	2	2	2	2
heptachlor	0	0	3	3	3	3
heptachlor epoxide	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	3	3	3	3
mcpa, sodium salt	0	0	2	2	2	2
mcppa	0	0	2	2	2	2
merphos	0	0	2	2	2	2
methiocarb	0	0	2	2	2	2
methomyl	0	0	3	3	3	3
methoxychlor	0	0	3	3	3	3
methyl bromide	0	0	2	4	2	4
methyl parathion	0	0	2	2	2	2
mevinphos	0	0	2	2	2	2
naled	0	0	2	2	2	2
ortho-dichlorobenzene	0	0	2	4	2	4

COUNTY: SANTA CRUZ

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
ortho-dichlorobenzene, other rel	0	0	2	4	2	4
oxamyl	0	0	3	3	3	3
paraquat bis(methylsulfate)	0	0	1	1	1	1
parathion	0	0	1	1	1	1
phorate	0	0	3	3	3	3
propoxur	0	0	2	2	2	2
propylene dichloride	1	2	1	1	2	3
prothiofos	0	0	2	2	2	2
ronnel	0	0	2	2	2	2
silvex	0	0	2	2	2	2
tetrachlorvinphos	0	0	2	2	2	2
toxaphene	0	0	3	3	3	3
trichloronate	0	0	2	2	2	2
xylene	0	0	2	2	2	2
TOTAL SAMPLE RESULTS		2		158		160

COUNTY: SHASTA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	3	3	3	3
aldrin	0	0	18	18	18	18
ametryne	0	0	8	8	8	8
atraton	0	0	8	8	8	8
atrazine	0	0	9	9	9	9
azinophos-methyl	0	0	8	8	8	8
benomyl	0	0	8	8	8	8
bhc (other than gamma isomer)	0	0	19	19	19	19
captan	0	0	8	8	8	8
carbaryl	0	0	22	22	22	22
carbofuran	0	0	22	22	22	22
chlordane	0	0	19	19	19	19
chloropicrin	0	0	10	10	10	10
chlorpropham	0	0	22	22	22	22
demeton	0	0	8	8	8	8
diazinon	0	0	8	8	8	8
dichlobenil	0	0	1	1	1	1
dieldrin	0	0	19	19	19	19
disulfoton	0	0	8	8	8	8
diuron	0	0	22	22	22	22
endosulfan	0	0	19	19	19	19
endosulfan sulfate	0	0	19	19	19	19
endrin	0	0	21	21	21	21
endrin aldehyde	0	0	19	19	19	19
ethion	0	0	8	8	8	8
fluometuron	0	0	22	22	22	22
formaldehyde	0	0	3	3	3	3
heptachlor	0	0	17	17	17	17

COUNTY: SHASTA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
heptachlor epoxide	0	0	17	17	17	17
lindane (gamma-bhc)	0	0	21	21	21	21
linuron	0	0	22	22	22	22
malathion	0	0	8	8	8	8
methiocarb	0	0	22	22	22	22
methomyl	0	0	22	22	22	22
methoxychlor	0	0	1	1	1	1
methyl parathion	0	0	8	8	8	8
monuron	0	0	22	22	22	22
neburon	0	0	22	22	22	22
oxamyl	0	0	22	22	22	22
paraquat bis(methylsulfate)	0	0	8	8	8	8
phosmet	0	0	2	2	2	2
picloram	0	0	2	2	2	2
prometon	0	0	8	8	8	8
prometryn	0	0	8	8	8	8
propazine	0	0	8	8	8	8
propham	0	0	22	22	22	22
propoxur	0	0	22	22	22	22
silvex	0	0	2	2	2	2
simazine	0	0	9	9	9	9
simetryn	0	0	8	8	8	8
terbutryn	0	0	8	8	8	8
toxaphene	0	0	20	20	20	20
TOTAL SAMPLE RESULTS		0		692		692

COUNTY: SIERRA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	11	22	11	22
silvex	0	0	11	11	11	11
toxaphene	0	0	1	2	1	2
TOTAL SAMPLE RESULTS		0		35		35

COUNTY: SISKIYOU

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	6	6	6	6
2,4-D	0	0	7	7	7	7
aldicarb	0	0	10	10	10	10
atrazine	0	0	18	18	18	18
bromacil	0	0	9	9	9	9
carbaryl	0	0	7	7	7	7
carbofuran	0	0	15	15	15	15
chloropicrin	0	0	2	2	2	2
chlorpyrifos	0	0	10	10	10	10
dicamba	0	0	14	14	14	14
diuron	0	0	9	9	9	9
endrin	0	0	1	1	1	1
ethion	0	0	6	6	6	6
lindane (gamma-bhc)	0	0	1	1	1	1

COUNTY: SISKIYOU

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
methamidophos	0	0	9	9	9	9
metribuzin	0	0	9	9	9	9
paraquat bis(methylsulfate)	0	0	18	18	18	18
parathion	0	0	4	4	4	4
phosmet	0	0	2	2	2	2
picloram	0	0	11	11	11	11
propylene dichloride	3	6	7	7	10	13
silvex	0	0	1	1	1	1
simazine	0	0	18	18	18	18
TOTAL SAMPLE RESULTS		6		194		200

COUNTY: SOLANO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	21	22	21	22
alachlor	0	0	4	4	4	4
aldicarb	0	0	5	9	5	9
aldicarb sulfone	0	0	4	8	4	8
aldicarb sulfoxide	0	0	4	8	4	8
ametryne	0	0	1	2	1	2
atrazine	1	3	5	5	6	8
benomyl	0	0	5	5	5	5
bromacil	0	0	8	9	8	9
captan	0	0	9	10	9	10
carbaryl	0	0	8	8	8	8
carbofuran	0	0	4	4	4	4
chlorpyrifos	0	0	3	3	3	3
cyanazine	0	0	4	5	4	5

COUNTY: SOLANO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
diazinon	0	0	10	10	10	10
dicofol	0	0	4	4	4	4
dimethoate	0	0	6	6	6	6
dinoseb	0	0	1	1	1	1
disulfoton	0	0	5	5	5	5
diuron	0	0	9	9	9	9
endosulfan	0	0	5	5	5	5
methamidophos	0	0	2	2	2	2
methomyl	0	0	6	6	6	6
methyl bromide	0	0	21	22	21	22
metribuzin	0	0	1	2	1	2
ortho-dichlorobenzene	0	0	21	22	21	22
oryzalin	0	0	9	9	9	9
paraquat bis(methylsulfate)	0	0	2	2	2	2
parathion	0	0	12	12	12	12
prometon	0	0	4	6	4	6
prometryn	0	0	1	2	1	2
propazine	0	0	1	2	1	2
propylene dichloride	0	0	21	22	21	22
simazine	0	0	16	17	16	17
terbutryn	0	0	1	2	1	2
xylene	0	0	21	22	21	22
TOTAL SAMPLE RESULTS		3		292		295

COUNTY: SONOMA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	100	101	100	101
acephate	0	0	1	1	1	1
azinophos-methyl	0	0	13	13	13	13
benomyl	0	0	11	11	11	11
captan	0	0	10	10	10	10
carbaryl	0	0	20	20	20	20
chloropicrin	0	0	8	8	8	8
chlorpyrifos	0	0	13	13	13	13
diazinon	0	0	10	10	10	10
dimethoate	0	0	20	20	20	20
dinoseb	0	0	10	10	10	10
diuron	0	0	8	8	8	8
dnoc, sodium salt	0	0	8	8	8	8
endosulfan	0	0	1	1	1	1
ethion	0	0	12	12	12	12
glyphosate, isopropylamine salt	0	0	2	2	2	2
malathion	0	0	1	1	1	1
maneb	0	0	7	7	7	7
methyl bromide	0	0	100	101	100	101
naled	0	0	5	5	5	5
ortho-dichlorobenzene	0	0	100	101	100	101
oryzalin	0	0	1	1	1	1
paraquat bis(methylsulfate)	0	0	2	2	2	2
phosmet	0	0	11	11	11	11
propylene dichloride	0	0	100	101	100	101
simazine	0	0	8	8	8	8
xylene	0	0	100	101	100	101
TOTAL SAMPLE RESULTS		0		687		687

COUNTY: STANISLAUS

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,3-dichloropropene	0	0	8	9	8	9
arsenic	0	0	1	1	1	1
atrazine	3	6	25	43	28	49
bromacil	0	0	20	41	20	41
chloropicrin	0	0	1	1	1	1
copper	0	0	1	1	1	1
dbcp	1	2	13	13	14	15
diuron	1	4	19	39	20	43
ethylene dibromide	0	0	1	1	1	1
methyl bromide	0	0	8	9	8	9
ortho-dichlorobenzene	0	0	3	3	3	3
prometon	0	0	20	41	20	41
propylene dichloride	0	0	8	9	8	9
simazine	5	12	23	37	28	49
xylene	0	0	10	11	10	11
TOTAL SAMPLE RESULTS		24		259		283

COUNTY: SUTTER

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	6	6	6	6
aldicarb	0	0	6	6	6	6
atrazine	0	0	24	24	24	24
azinophos-methyl	0	0	3	3	3	3
benomyl	0	0	10	10	10	10
bhc (other than gamma isomer)	0	0	1	1	1	1
bromacil	0	0	7	7	7	7
captan	0	0	2	2	2	2
carbofuran	0	0	6	6	6	6
chlordane	0	0	4	4	4	4
chloropicrin	0	0	4	4	4	4
dbcp	0	0	34	34	34	34
diazinon	0	0	4	4	4	4
dimethoate	0	0	4	4	4	4
dinoseb	0	0	14	14	14	14
disulfoton	0	0	8	8	8	8
diuron	0	0	4	4	4	4
endosulfan	0	0	4	4	4	4
endosulfan sulfate	0	0	4	4	4	4
endothall	0	0	1	1	1	1
ethylene dibromide	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	1	1	1	1
mcpa, dimethylamine salt	0	0	3	3	3	3
methidathion	0	0	1	1	1	1
methyl parathion	0	0	10	10	10	10
molinate	0	0	5	5	5	5
oxamyl	0	0	2	2	2	2
parathion	0	0	1	1	1	1

COUNTY: SUTTER

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
phosalone	0	0	1	1	1	1
propanil	0	0	1	1	1	1
simazine	0	0	25	25	25	25
thiobencarb	0	0	2	2	2	2
TOTAL SAMPLE RESULTS		0		205		205

COUNTY: TEHAMA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,2,4-trichlorobenzene	0	0	4	4	4	4
1,3-dichloropropene	0	0	29	29	29	29
2,4,6-trichlorophenol	0	0	4	4	4	4
2,4-D	0	0	6	6	6	6
2,4-dinitrophenol	0	0	4	4	4	4
acenapthene	0	0	4	4	4	4
aldrin	0	0	29	30	29	30
ametryne	0	0	6	6	6	6
atrazine	7	18	51	55	58	73
benomyl	0	0	40	41	40	41
bhc (other than gamma isomer)	0	0	30	31	30	31
bromacil	1	4	27	33	28	37
captan	0	0	1	1	1	1
chlordane	0	0	30	31	30	31

COUNTY: TEHAMA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
cyanazine	0	0	6	6	6	6
diazinon	0	0	54	55	54	55
dieldrin	0	0	30	31	30	31
dinoseb	0	0	54	56	54	56
disulfoton	0	0	2	2	2	2
diuron	0	0	25	33	25	33
endosulfan	0	0	31	32	31	32
endosulfan sulfate	0	0	30	31	30	31
endrin	0	0	30	31	30	31
endrin aldehyde	0	0	30	31	30	31
heptachlor	0	0	30	31	30	31
heptachlor epoxide	0	0	30	31	30	31
hexachlorobenzene	0	0	4	4	4	4
lindane (gamma-bhc)	0	0	30	31	30	31
methomyl	0	0	3	3	3	3
methyl bromide	0	0	29	34	29	34
metribuzin	0	0	6	6	6	6
naphthalene	0	0	4	4	4	4
ortho-dichlorobenzene	0	0	29	33	29	33
paraquat bis(methylsulfate)	0	0	16	16	16	16
parathion	0	0	44	45	44	45
phosalone	0	0	14	14	14	14
prometon	0	0	24	38	24	38
prometryn	0	0	6	6	6	6
propazine	0	0	6	6	6	6
propylene dichloride	0	0	29	29	29	29
simazine	2	6	76	87	78	93
terbutryn	0	0	6	6	6	6

COUNTY: TEHAMA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
toxaphene	0	0	33	37	33	37
xylene	0	0	29	29	29	29
TOTAL SAMPLE RESULTS		28		1077		1105

COUNTY: TRINITY

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
2,4-D	0	0	2	2	2	2
endrin	0	0	2	2	2	2
lindane (gamma-bhc)	0	0	2	2	2	2
methoxychlor	0	0	2	2	2	2
silvex	0	0	2	2	2	2
toxaphene	0	0	2	2	2	2
TOTAL SAMPLE RESULTS		0		12		12

COUNTY: TULARE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,2,4-trichlorobenzene	0	0	3	3	3	3
1,2-dichloropropane, 1,3-dichlor	0	0	2	2	2	2
1,3-dichloropropene	0	0	127	137	127	137
2,4,6-trichlorophenol	0	0	3	3	3	3
2,4-D	0	0	2	3	2	3
2,4-dinitrophenol	0	0	3	3	3	3
acenapthene	0	0	3	3	3	3
acephate	0	0	19	19	19	19
alachlor	0	0	16	16	16	16
aldicarb	0	0	23	28	23	28
aldicarb sulfone	0	0	4	9	4	9
aldicarb sulfoxide	0	0	4	9	4	9
aldrin	0	0	3	3	3	3
ametryne	0	0	41	42	41	42
atrazine	1	3	108	211	109	214
benomyl	0	0	19	19	19	19
bhc (other than gamma isomer)	0	0	3	3	3	3
bromacil	18	36	91	136	109	172
captan	0	0	19	19	19	19
carbaryl	0	0	19	19	19	19
carbofuran	0	0	19	19	19	19
chlordane	0	0	3	3	3	3
chloropicrin	0	0	19	19	19	19
chlorothalonil	0	0	16	16	16	16
chloroxuron	0	0	11	11	11	11
chlorpropham	0	0	16	16	16	16
chlorpyrifos	0	0	19	19	19	19
chlorthal-dimethyl	0	0	18	18	18	18

COUNTY: TULARE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
cyanazine	0	0	60	61	60	61
dbcp	12	29	77	88	89	117
diazinon	0	0	20	21	20	21
dicofol	0	0	20	20	20	20
dieldrin	0	0	3	3	3	3
dimethoate	0	0	21	21	21	21
dinoseb	0	0	21	21	21	21
disulfoton	0	0	19	19	19	19
diuron	31	104	78	116	109	220
endosulfan	0	0	23	23	23	23
endosulfan sulfate	0	0	3	3	3	3
endothall	0	0	19	19	19	19
endrin	0	0	3	3	3	3
endrin aldehyde	0	0	3	3	3	3
ethion	0	0	16	16	16	16
ethylene dibromide	0	0	31	31	31	31
fenamiphos	0	0	19	19	19	19
fenuron	0	0	3	3	3	3
fluometuron	0	0	11	11	11	11
heptachlor	0	0	3	3	3	3
heptachlor epoxide	0	0	3	3	3	3
hexachlorobenzene	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	3	3	3	3
linuron	0	0	11	24	11	24
malathion	0	0	16	16	16	16
maneb	0	0	19	19	19	19
methamidophos	0	0	22	25	22	25
methomyl	0	0	21	21	21	21

COUNTY: TULARE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
methoxychlor	0	0	16	16	16	16
methyl bromide	0	0	131	146	131	146
methyl parathion	0	0	16	16	16	16
metribuzin	0	0	41	42	41	42
monuron	3	7	8	17	11	24
naled	0	0	11	11	11	11
naphthalene	0	0	3	3	3	3
neburon	0	0	11	11	11	11
ortho-dichlorobenzene	0	0	128	138	128	138
oryzalin	0	0	19	19	19	19
oxamyl	0	0	21	21	21	21
paraquat bis(methylsulfate)	0	0	21	21	21	21
parathion	0	0	19	19	19	19
pcnb	0	0	19	19	19	19
phorate	0	0	19	19	19	19
prometon	2	7	81	182	83	189
prometryn	0	0	67	68	67	68
propazine	0	0	41	42	41	42
propham	0	0	16	18	16	18
propylene dichloride	1	2	126	135	127	137
s,s,s-tributyl phosphorotrithioa	0	0	16	16	16	16
siduron	0	0	11	11	11	11
simazine	38	114	71	102	109	216
tebuthiuron	0	0	11	11	11	11
terbutryn	0	0	41	42	41	42
toxaphene	0	0	19	19	19	19
xylene	0	0	126	128	126	128
ziram	0	0	19	19	19	19
TOTAL SAMPLE RESULTS		302		2737		3039

COUNTY: TUOLUMNE

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
atrazine	0	0	16	17	16	17
bromacil	0	0	19	20	19	20
carbaryl	0	0	19	20	19	20
chlorpyrifos	0	0	7	8	7	8
diazinon	0	0	7	8	7	8
diuron	0	0	19	19	19	19
methyl bromide	0	0	0	0	0	0
ortho-dichlorobenzene	1	3	0	0	1	3
simazine	0	0	16	16	16	16
simetryn	0	0	1	1	1	1
xylene	0	0	0	0	0	0
TOTAL SAMPLE RESULTS		3		109		112

COUNTY: VENTURA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,2,4-trichlorobenzene	0	0	2	2	2	2
1,2-dichloropropane, 1,3-dichlor	0	0	1	1	1	1
1,3-dichloropropene	0	0	94	113	94	113
2,4,6-trichlorophenol	0	0	2	2	2	2
2,4-dinitrophenol	0	0	2	2	2	2
acenapthene	0	0	2	2	2	2
acephate	0	0	65	65	65	65
alachlor	0	0	79	79	79	79
aldicarb	0	0	65	65	65	65
atrazine	0	0	79	79	79	79
bromacil	0	0	1	1	1	1
captan	0	0	70	70	70	70
carbaryl	0	0	1	1	1	1
carbofuran	0	0	1	1	1	1
chloropicrin	0	0	69	69	69	69
chlorpyrifos	0	0	80	80	80	80
chlorthal-dimethyl	0	0	69	69	69	69
dbcp	0	0	69	69	69	69
diazinon	0	0	1	1	1	1
dicofol	0	0	70	70	70	70
endosulfan	0	0	69	69	69	69
ethylene dibromide	0	0	69	69	69	69
fenamiphos	0	0	73	73	73	73
hexachlorobenzene	0	0	2	2	2	2
methamidophos	0	0	64	64	64	64
methyl bromide	0	0	94	113	94	113
naphthalene	0	0	2	2	2	2
ortho-dichlorobenzene	0	0	94	115	94	115

COUNTY: VENTURA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
pcnb	0	0	68	68	68	68
prometryn	0	0	79	79	79	79
propargite	0	0	64	64	64	64
propylene dichloride	0	0	94	113	94	113
simazine	0	0	79	79	79	79
tetradifon	0	0	69	69	69	69
toxaphene	0	0	69	69	69	69
xylene	0	0	94	112	94	112
TOTAL SAMPLE RESULTS		0		2001		2001

COUNTY: YOLO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
1,2,4-trichlorobenzene	0	0	2	2	2	2
1,3-dichloropropene	0	0	54	59	54	59
2,4,6-trichlorophenol	0	0	2	2	2	2
2,4-dinitrophenol	0	0	2	2	2	2
acenapthene	0	0	2	2	2	2
alachlor	0	0	36	36	36	36
aldicarb	0	0	31	36	31	36
aldicarb sulfone	0	0	3	6	3	6
aldicarb sulfoxide	0	0	3	6	3	6
aldrin	0	0	2	2	2	2
atrazine	0	0	38	38	38	38
bhc (other than gamma isomer)	0	0	2	2	2	2
bromacil	0	0	3	3	3	3
carbofuran	0	0	45	45	45	45

COUNTY: YOLO

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
chlordane	0	0	2	2	2	2
dbcp	0	0	39	39	39	39
dieldrin	0	0	2	2	2	2
dinoseb	0	0	46	46	46	46
diuron	0	0	27	27	27	27
endosulfan	0	0	2	2	2	2
endosulfan sulfate	0	0	2	2	2	2
endrin	0	0	2	2	2	2
endrin aldehyde	0	0	2	2	2	2
ethylene dibromide	0	0	34	34	34	34
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	54	59	54	59
naphthalene	0	0	2	2	2	2
ortho-dichlorobenzene	0	0	54	61	54	61
prometon	0	0	3	3	3	3
propylene dichloride	0	0	53	56	53	56
simazine	0	0	48	48	48	48
toxaphene	0	0	2	2	2	2
xylene	0	0	54	57	54	57
TOTAL SAMPLE RESULTS		0		695		695

COUNTY: YUBA

PESTICIDE	POSITIVE		NEGATIVE		TOTAL	
	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES	NO. OF WELLS	NO. OF SAMPLES
acephate	0	0	11	11	11	11
atrazine	0	0	3	3	3	3
captan	0	0	4	4	4	4
carbaryl	0	0	37	37	37	37
carbofuran	0	0	2	2	2	2
dbcp	0	0	1	1	1	1
diazinon	0	0	26	26	26	26
diuron	0	0	1	1	1	1
fenamiphos	0	0	1	1	1	1
paraquat bis(methylsulfate)	0	0	2	4	2	4
parathion	0	0	25	25	25	25
simazine	0	0	2	2	2	2
TOTAL SAMPLE RESULTS		0		117		117