SAMPLING FOR PESTICIDE RESIDUES IN CALIFORNIA WELL WATER

2007 Update of the Well Inventory Database

For Sampling Results Reported From July 1, 2006 through June 30, 2007

Twenty-second Annual Report

Pursuant to the
Pesticide Contamination Prevention Act

California Environmental Protection Agency
DEPARTMENT OF PESTICIDE REGULATION

February 2008

EH08-01

California Department of Pesticide Regulation

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EH08-01

EXECUTIVE SUMMARY

The Pesticide Contamination Prevention Act

The Pesticide Contamination Prevention Act (PCPA), enacted in 1985 and subsequently amended, strengthens the Department of Pesticide Regulation's (DPR's) regulatory authority to prevent ground water contamination and to respond to detections of pesticide residues in ground water. The PCPA requires:

1. DPR to maintain a statewide database of wells sampled for pesticide active ingredients (AIs).
2. State and local agencies to submit results of well sampling for AIs to DPR.
3. DPR to post on its website specified data contained in the database and actions taken to prevent pesticide contamination.

The Well Inventory Database

This is the twenty-second annual report, which summarizes data submitted to DPR from July 1, 2006, to June 30, 2007. Data in these reports are used to display geographic distribution of well sampling and pesticides in sampled wells, identify areas potentially vulnerable to contamination by the legal, agricultural use of pesticides, and design studies for future sampling.

The data do not represent a complete survey of ground water quality throughout the State, nor do they represent sampling for all pesticides. The data indicate pesticides that are present in well water among those pesticides for which analyses were performed.

Data Summary

1. This report includes well sampling results obtained by the California Department of Health Services (CDPH) through public and private water purveyors and by DPR's Ground Water Monitoring program.
2. Ninety-nine percent of the wells sampled were municipal or domestic drinking water wells.
3. Data represent 3,290 wells in 56 counties that were sampled for one or more of 122 pesticide active ingredients and breakdown products (collectively referred to hereinafter as "pesticide-related compounds").
4. CDPH reported detections of one or more pesticide-related compounds in 350 wells; DPR verified the presence of one or more pesticide-related compounds in 61 wells.
5. Thirty-two pesticide-related compounds were detected during this reporting period. DPR verified the presence of ten of these compounds in ground water. These verified detections only included pesticide active ingredients, and their breakdown products, of pesticides that are currently regulated as ground water contaminants or are no longer allowed to be used in California.

Actions Taken to Prevent Migration of Pesticides to Ground Water

Regulations to Prevent Pesticide Movement to Ground Water. DPR continues to implement regulations adopted to stop movement of pesticides in areas already contaminated, and prevent contamination in other areas before it occurs. Pesticides found in ground water due to agricultural use are subject to certain use restrictions in one-square mile sections of land, called ground water protection areas (GWPAs). These areas are vulnerable to pesticide movement to ground water based either on detections of pesticides in ground water, or on the California vulnerability model (CALVUL) developed by DPR scientists to predict where pesticide

contamination of ground water is likely to occur. The GWPAs and use restrictions were adopted in regulations that became effective May 27, 2004. DPR is currently conducting a study to determine how the parameters used to identify vulnerable areas need to be expanded to encompass sections not predicted by the model where pesticide residues are being found.

Ground Water Sampling. The PCPA requires DPR to develop a list of pesticides, called the Groundwater Protection List (GWPL), with the potential to pollute ground water, and to conduct sampling to determine if those pesticides have migrated to ground water. In 2006 DPR completed a GWPL well monitoring survey for aldicarb and two of its breakdown products, aldicarb sulfone and aldicarb sulfoxide. No residues of aldicarb or its breakdown products were detected.

The PCPA also requires DPR to respond to reported detections of pesticides in ground water to determine if they are due to agricultural use. In sampling conducted to investigate reported detections of methomyl and aldicarb breakdown products, none of these pesticide compounds were detected in any of the sampled wells.

In spring 2007, DPR initiated a well study to determine if pesticides regulated in GWPAs were present in areas outside of existing GWPAs where some pesticide residues had been previously reported. This study is ongoing and the results will be included in next year's report.

Evaluating the Contamination Potential of New Products. DPR scientists used the probabilistic modeling approach to evaluate the ground water contamination potential of nine pesticide products, formulated from three active ingredients, submitted for California registration. These active ingredients were aminopyralid, sulfosulfuron and sulfentrazone. All products except sulfentrazone were determined to present a negligible threat to California ground water. Sulfentrazone is under further evaluation.

Chemigation Initiative. Chemigation is the application of pesticides through irrigation systems. Because of the U.S. EPA's Label Improvement Program, pesticide labeling requires the use of specific backflow prevention devices to protect ground or surface water sources when pesticides are applied through an irrigation system. DPR recently completed an active chemigation training program that educated growers, pest control operators, irrigation dealers, and state and local pesticide use enforcement staff on system engineering, safe handling practices and regulatory requirements. As a result, people who use, install and regulate chemigation systems are better able to detect and correct problems before environmental damage occurs.

To evaluate chemigation-related educational and regulatory needs, DPR established a task force of irrigation specialists, backflow prevention equipment manufacturers and dealers, representatives from the agricultural community, engineers with expertise in backflow prevention, representatives from the county agricultural commissioners, and other interested parties. The task force has completed its work and developed recommendations for adopting new chemigation regulations, alternative chemigation devices and best management practices for the timing and application of pesticides through irrigation systems. DPR is considering options for implementing the Task Force's recommendations.

Activities of the State and Regional Water Boards

The State Water Resources Control Board (SWRCB) and its nine regional water quality control boards are responsible for protecting the beneficial uses of water in California and for controlling all discharges of waste into waters of the state. Section IV of this report summarizes actions taken by SWRCB to prevent pesticides from migrating to ground water, which is available at: http://www.waterboards.ca.gov/gama/docs/ab2021_fy0607.pdf

PREFACE

This report fulfills the requirements of AB 2701 (Chapter 644, Statutes of 2004), which amended the PCPA to require DPR to post specified information on sampling for pesticide residues in California ground water to its website. This law replaced the previous requirement that DPR submit the sampling information in a written report to the Legislature, SWRCB and the California Department of Public Health (CDPH).

This report presents data reported to or produced by DPR from July 1, 2006, to June 30, 2007.

The PCPA requires the annual report to give the location of wells for which sampling results were reported. Privacy and security concerns and the large number of wells sampled prevent DPR from listing exact well locations. Instead, this report summarizes the locations by county. For detailed well sampling location information at the county, township, range and section level, contact Craig Nordmark at (916) 324-4138.

The information presented in Section IV was produced by SWRCB and is available at: http://www.waterboards.ca.gov/gama/docs/ab2021_fy0607.pdf

ACKNOWLEDGMENTS

The authors wish to thank the reviewers whose unique perspectives and experiences helped ensure the accuracy and readability of this report. We gratefully acknowledge the staff of DPR and cooperating federal, state, local, and private agencies for contributing to the database.

DISCLAIMER

The mention of commercial products, their source, or their use in this report is not to be construed as either an actual or implied endorsement of such product.

TABLE OF ACRONYMS AND ABBREVIATIONS

1,2-D	1,2-dichloropropane (propylene dichloride)
3CCR	Title 3 of the California Code of Regulations
ACET	deethyl-simazine or deisopropyl-atrazine
AI(s)	active ingredient (s)
CAC	County Agricultural Commissioner
CALVUL	California Vulnerability Model
CDPH	California Department of Public Health
CIT	Center for Irrigation Technology
DACT	diaminochlorotriazine
DBCP	1,2-dibromo-3-chloropropane
DEA	deethyl-atrazine
DPR	Department of Pesticide Regulation
EDB	ethylene dibromide
EM	Environmental Monitoring Branch
ESA	ethanesulfonic acid
ETo	evapotranspiration
FAC	Food and Agriculture Code
GIS	geographical information systems
GWPA	ground water protection area
GWPL	Groundwater Protection List
IRIS	integrated risk information system as a drinking water level
MCL	maximum contamination limit
MDL	minimum detection limit
OEHHA	Office of Environmental Health Hazard Assessment
OXA	oxanilic acid
PCPA	Pesticide Contamination Prevention Act
PDRP	Pesticide Detection Response Process
PMZ	Pesticide Management Zone
ppb	parts per billion
PREC	Pesticide Registration and Evaluation Committee
PUR	Pesticide Use Report
RWQCB	Regional Water Quality Control Board
SNARL	suggested no-adverse-response levels
SNV	specific numerical values
SWRCB	State Water Resources Control Board
TPA	2,3,5,6-tetrachloroterephthalic acid
USGS	United States Geological Survey

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I. WELL INVENTORY DATABASE

Introduction

In 1983, the Environmental Hazards Assessment Program of the California Department of Food and Agriculture, now the EM Branch of DPR, initiated a project to collect and store data in a database called the well inventory database. The purpose was to (1) compile reliable information on the occurrence of non-point source contamination of ground water and (2) facilitate graphical and numerical analysis of the data.

Enacted in 1985, the PCPA required DPR to take specific actions to prevent further pesticide pollution of the ground water aquifers of the State. One action was to develop and maintain a database of wells sampled for pesticides throughout the State. State and local agencies were required to submit ground water pesticide sampling data to DPR from both point and non-point sources for inclusion in the well inventory database. Additionally, the PCPA mandated DPR to determine if ground water detections of pesticides were due to legal agricultural use, formally review the agricultural use detections to determine if continued use could be allowed, and if so, adopt regulations to modify use of the pesticide. The Legislature amended the PCPA in 2004, (Chapter 644, Statutes of 2004, AB 2701) to allow DPR to post this report on its website in lieu of submitting a written report to the Legislature, SWRCB, and CDPH [Food and Agricultural Code (FAC) section 13152(e)].

This is the twenty-second annual report, which summarizes data collected from July 1, 2006, to June 30, 2007. DPR produced two cumulative reports, in 1992 and 2003, which presented all available data in addition to the required annual information for that year. The data in the well inventory database that has been summarized in these reports are used to:

- Display geographic distribution of well sampling
- Display geographic distribution of pesticides in sampled wells
- Identify areas potentially vulnerable to contamination by the legal, agricultural use of pesticides
- Design studies for future sampling

Section I of the report describes specific criteria that DPR uses before entering data into the database and the limitations of how the data can be interpreted, and summarizes the well inventory data collected from July 1, 2006, to June 30, 2007. The summary tables are organized to highlight verified detections, which are the only detections that serve a regulatory purpose (memo from Weaver D. to Goh K., January 1995). Section II summarizes the factors involved in the movement of pesticides to ground water and describes specific management practices that help prevent ground water contamination. Section III summarizes the actions DPR has taken to prevent movement of pesticides to ground water. Section IV summarizes the SWRCB's and the Regional Water Quality Control Board's (RWQCB) monitoring activities and can be found at: http://www.cdpr.ca.gov/docs/empm/pubs/ehapreps/swrcb/ab2021_fy0506.pdf

Criteria for Evaluating Data

Minimum Data Requirements

Effective December 1, 1986, DPR, SWRCB and CDPH jointly agreed on the following minimum requirements to be included as part of any pesticide data submitted to DPR:

- State well number (township/range/section/tract/sequence number/base/meridian)
- County
- Date of sample (month/day/year)
- Chemical analyzed
- Individual sample concentration, in parts per billion
- Sampling agency
- Analyzing laboratory
- Street address of well location
- Well type
- Sample type (e.g., initial or confirmation)

Interpretation Limitations

Interpretation of sampling results in the database is subject to the following limitations:

(1) The data indicate specific pesticides and breakdown products detected in well water among those pesticides for which analyses were conducted. They do not represent a complete survey of groundwater quality throughout the state nor do they represent sampling for all pesticides used.

(2) Sampling by agencies other than DPR is not necessarily related to suspected agricultural non-point sources of contamination. It should not be assumed that results submitted by those agencies are an indication of which pesticides are more or less likely to reach groundwater as a result of non-point source agricultural use.

Classifying Analytical Results

Each record in the database represents a single well water sample analyzed for pesticide residue. The analytical result is classified according to the following criteria:

(1) DPR designates a pesticide analysis of a well water sample as a non-detection with the number zero in the concentration field, if the pesticide residue is not detected at or above the minimum detection limit (MDL) of the analytical method.
(2) DPR classifies samples in which pesticide residues are detected at or above the MDL into one of three categories:
    a. ***Unconfirmed:*** pesticide residues detected in only one sample during a single monitoring survey.
    b. ***Confirmed, unverified:*** pesticide residues detected in two discrete samples taken from a single well during a single monitoring survey.
    c. ***Verified:*** confirmed and unconfirmed detections that meet the criteria specified in (FAC section 13149[d]), which requires that either the analytical method provides unequivocal identification of a chemical as approved by DPR or that the detection is verified within 30 days by a second analytical method or a second analytical laboratory approved by DPR. DPR has established criteria (Biermann, 1989, 1996) for determining if the detection of a pesticide or its breakdown product(s) meets the standards of section 13149[d]. A confirmed or unconfirmed detection may not be verified for the following reasons:

i. DPR has not completed follow-up sampling. This means that at the cutoff date for the preparation of the well inventory report (usually 6-10 months before the release of the report) verification had not yet been completed for the pesticide-related compound.

ii. DPR did not resample the well because the detection occurred in a ground water protection area (GWPA) and the compound detected was on the 6800(a) list of known ground water contaminants. Since the use of 6800(a) compounds is already regulated to protect ground water in these areas, it is unnecessary to verify additional reported detections.

iii. The pesticides were not currently registered for use; the pesticides were registered for other than agricultural, outdoor industrial, or outdoor institutional uses; or the pesticides were found in ground water, but were determined not to be the result of legal agricultural use.

iv. The well was not available for resampling because it had been destroyed (the standard term for sealing and closing a well), was no longer functioning as a well, or was a monitoring well, usually reported by the U.S. Geological Survey (USGS). Since monitoring wells require special equipment for sampling, they are not normally sampled by DPR unless there are other wells within a four-section area that can be sampled to help determine whether residues are due to legal agricultural use.

v. DPR could not obtain permission to sample from the well owner or manager. Historically, DPR has only sampled wells with the permission of the well owner. Therefore, if a well has been sampled and the owner decides not to permit additional sampling, DPR would not be able to verify any reported detection in that well. Well owners rarely deny DPR permission to sample a well.

vi. "The detection reported by another agency was below 80 percent of the current MDL established by the California Department of Food and Agriculture (CDFA) laboratory." Some reports of pesticide residue detections are at levels far below the MDL obtainable by laboratories approved by DPR. Any attempt to verify these detections by DPR would be futile. Verifying these detections would be reconsidered if the CDFA laboratory's MDL were set lower.

vii. DPR conducted sampling in response to a detection and did not detect the compound under investigation. This means that DPR was unable to verify the presence of the pesticide in the well as a result of analysis of a back-up sample or a subsequent sample taken.

Note: in the case of points iv and v, if there are other wells in the area, DPR would sample them to determine if pesticides residues are present and then attempt to meet the criteria for verification.

A verified detection is the only type of detection that DPR uses for the basis of regulatory action.

Data Summary

1. Data in this report are the result of six well sampling surveys.
2. Data represent 3,290 wells in 56 counties that were sampled for one or more of 122 pesticide-related compounds. Ninety-nine percent of the wells sampled were municipal or domestic drinking water wells.
3. Thirty-two compounds were reported with detections. Ten detections were verified detections.
4. No new active ingredients or pesticide breakdown products were verified.

Tables I-1a and I-1b provide an annual and cumulative summary of the number of wells and the number of pesticides sampled throughout California for data produced by or submitted to DPR by June 30, 2007.

Table I-1a. Annual and cumulative summary of the number of wells sampled and their detection status, and the number of counties where samples were collected.

Category	Year 2007	Total [b] 1985-2007
Total **wells** sampled	3,290	22,560
Wells with no detections	2,879	17,508
Wells with detections [a]	411	5,052
Wells with verified detections	61	1,028
Total **counties** sampled	56	58
Counties with no detections	29	8
Counties with detections [a]	27	50
Counties with verified detections	2	33

(a) Includes both verified and unverified detections. Detections of pesticide residues are verified if either the analytical method provides unequivocal identification of a chemical as approved by DPR or the residues were detected within 30 days using a second analytical method or a second analytical laboratory approved by DPR.

(b) The total represents unique wells sampled in a county where a single well with sampling data reported in more than one year is counted only once.

Table I-1b. Annual and cumulative summary of the number of pesticide-related compounds analyzed, the number of compounds with detections and the number of compounds where DPR determined that detections were the result of non-point source pesticide applications.

Category	Year 2007	Total [b] 1985-2007
Total **pesticide-related** compounds analyzed	122	337
Compounds with no detections	90	225
Compounds with detections [a]	32	112
Compounds with verified detections	10	30
Compounds with detections in ground water as a result of non-point source pesticide applications	12 [c]	19 [d]

(a) Includes both verified and unverified detections. Detections of pesticide residues are verified if either the analytical method provides unequivocal identification of a chemical as approved by DPR or the residues were detected within 30 days using a second analytical method or a second analytical laboratory approved by DPR.

(b) The total represents unique compounds analyzed where a single compound that had sampling data reported in more than one year is counted only once.

(c) The twelve compounds are atrazine, deethyl-simazine or deisopropyl-atrazine (ACET), deethyl-atrazine (DEA), diaminochlorotriazine (DACT), bromacil, 1,2-dibromo-3-chloropropane (DBCP), diuron, ethylene dibromide (EDB), norflurazon, desmethylnorflurazon, prometon, and simazine.

(d) The 19 compounds are 1,2-dichloropropane (1,2-D), ACET, alachlor oxanilic acid, alachlor ethanesulfonic acid, aldicarb sulfone, aldicarb sulfoxide, atrazine, bentazon, bromacil, DBCP, DEA, DACT, diuron, EDB, hexazinone, norflurazon, desmethylnorflurazon, prometon, simazine, and 2,3,5,6-tetrachloroterephthalic acid (TPA). See Appendix C for more information on individual compounds.

Results by Reporting Agency

The data added to the well inventory database from July 1, 2006, to June 30, 2007 were from six well sampling surveys. The data represent 3,290 wells in 56 counties that were sampled for one or more of 122 pesticide-related compounds. Table I-2 summarizes the data added to the database by sampling agency. The numbers in the table for the two agencies contain some duplication. For example, all 10 counties, one of the 122 wells, and eight of the 15 chemicals analyzed listed for DPR were also included in the CDPH totals.

Table I-2. Summary, by agency, of records added to the well inventory database for the reporting period July 1, 2006, to June 30, 2007.

Sampling Agency	Wells	Counties	Chemicals Analyzed	Wells with Detections	Number of Surveys Reported	Records Added to Database
CDPH	3,169	56	116	350	1	102,460
DPR	122	10	15	61	5	892

Ninety-nine percent of these wells were public or private drinking water wells. The other wells were non-drinking water or unused, or the well type was unknown.

Results by County

The number of wells sampled in each county varied widely, from 633 wells in Los Angeles County to one well each in Calaveras, Modoc, Nevada, Plumas and Trinity counties. Data were not reported for two counties – Alpine and San Francisco. Table I-3 summarizes, by county, the

number of chemicals analyzed, the number of wells sampled, and the number of wells with verified and unverified detections of pesticide-related compounds. Individual wells may have both unverified and verified detections. Appendix A lists specific compounds that were sampled in each county and identifies the number of wells sampled and the number of wells with reported detections for each compound reported from July 1, 2006, to June 30, 2007.

Table I-3. Summary, by county, of the number of chemicals analyzed, the number of wells sampled, and the number of wells with unverified and verified detections reported for the period from July 1, 2006, to June 30, 2007.

County	Number of Chemicals Analyzed	Number of Wells Sampled	Number of Wells with Unverified Detections	Number of Wells with Verified Detections
Alameda	58	26	0	0
Alpine	NR	NR	NR	NR
Amador	12	4	0	0
Butte	13	36	0	0
Calaveras	11	1	0	0
Colusa	30	10	0	0
Contra Costa	56	9	1	0
Del Norte	11	5	0	0
El Dorado	56	21	1	0
Fresno	64	208	87	43
Glenn	14	6	0	0
Humboldt	11	2	0	0
Imperial	24	4	0	0
Inyo	57	18	1	0
Kern	86	255	36	0
Kings	17	16	2	0
Lake	76	17	0	0
Lassen	2	4	0	0
Los Angeles	80	633	15	0
Madera	38	42	4	0
Marin	22	3	0	0
Mariposa	34	26	1	0
Mendocino	76	16	2	0
Merced	42	50	12	0
Modoc	12	1	0	0
Mono	48	2	0	0
Monterey	67	77	3	0
Napa	58	7	0	0
Nevada	47	1	0	0
Orange	81	219	0	0
Placer	60	9	1	0
Plumas	11	1	0	0
Riverside	64	167	15	0
Sacramento	66	187	7	0

County	Number of Chemicals Analyzed	Number of Wells Sampled	Number of Wells with Unverified Detections	Number of Wells with Verified Detections
San Benito	55	8	0	0
San Bernardino	93	292	52	0
San Diego	74	46	0	0
San Francisco	NR	NR	NR	NR
San Joaquin	66	85	19	0
San Luis Obispo	49	38	1	0
San Mateo	68	15	1	0
Santa Barbara	59	27	0	0
Santa Clara	79	135	0	0
Santa Cruz	60	28	2	0
Shasta	10	13	1	0
Sierra	11	4	0	0
Siskiyou	10	3	0	0
Solano	59	9	0	0
Sonoma	79	109	6	0
Stanislaus	60	123	32	0
Sutter	41	6	0	0
Tehama	10	3	0	0
Trinity	10	1	0	0
Tulare	73	160	38	18
Tuolumne	24	6	0	0
Ventura	56	35	1	0
Yolo	62	31	1	0
Yuba	12	30	0	0

NR = Not Reported

Results by Pesticide

Sampling results from July 1, 2006, to June 30, 2007, were reported for 122 pesticide-related compounds. Among the 32 detected compounds, 10 were verified detections. All of these compounds had been listed in previous years' reports. Verified detections were the result of sampling conducted by DPR (see Appendix B for a detailed summary of the study). Table I-4 summarizes, by chemical, the number of counties where wells were sampled, the number of wells sampled, and the number of wells that had verified and unverified detections of pesticide-related compounds. Most wells were sampled for more than one compound. The table is sorted alphabetically.

Table I-4. Summary, by pesticide-related compounds, of the number of counties where wells were sampled, the number of wells sampled and the number of wells with verified and unverified detections for the period July 1, 2006 to June 30, 2007.

Chemical	Number of Counties Sampled	Number of Wells Sampled	Number of Wells with Unverified Detections	Number of Wells with Verified Detections
1,3-Dichloropropene (1,3-D, telone)	32	1009	0	0
1,1,2,2-Tetrachloroethane	54	2413	0	0
1,2,4-Trichlorobenzene	55	2347	0	0
1,2-D + 1,3-D + C-3 compounds	54	2156	1	0
1,2-Dichloropropane	55	2417	6	0
2,3,7,8-TCDD (dioxin)	21	324	1	0
2,4,5-T	25	291	0	0
2,4,5-TP (Silvex)	34	598	0	0
2,4,6-Trichlorophenol	1	23	0	0
2,4-D	35	605	1	0
2,4-Dinitrophenol	1	23	0	0
3-Hydroxycarbofuran	33	509	0	0
4(2,4-DB), dimethylamine salt	14	162	0	0
Acenaphthene	5	36	0	0
ACET	2	66	0	55
Acetochlor	5	55	0	0
Acifluorfen, sodium salt	11	114	0	0
Acrylonitrile	7	31	0	0
Alachlor	39	905	2	0
Aldicarb	38	566	0	0
Aldicarb sulfone	38	566	0	0
Aldicarb sulfoxide	38	567	0	0
Aldrin	32	489	0	0
Ametryne	1	1	0	0
Atraton	1	28	0	0
Atrazine	40	1179	1	3
Benefin (benfluralin)	1	11	0	0
Bentazon, sodium salt	33	595	0	0
Benzene (benzol)	54	2420	6	0
BHC (other than gamma isomer)	8	72	0	0
Bromacil	38	666	0	25
Butachlor	38	712	1	0
Butylate	1	1	0	0
Carbaryl	33	512	0	0
Carbofuran	34	545	0	0
Carbon disulfide	22	196	2	0
Chlordane	34	529	0	0

Chemical	Number of Counties Sampled	Number of Wells Sampled	Number of Wells with Unverified Detections	Number of Wells with Verified Detections
Chlorobenzilate	4	15	0	0
Chloromethane (methyl chloride)	54	1845	40	0
Chloroneb	5	16	0	0
Chlorothalonil	23	165	0	0
Chlorpropham	1	1	0	0
Chlorpyrifos	1	1	0	0
Chlorthal-dimethyl (dacthal / DCPA)	6	16	0	0
Chlorthal-dimethyl acid metabolites	21	274	3	0
Cycloate	1	1	0	
Dalapon	34	597	0	0
DBCP	37	1599	277	0
DDD	8	54	0	0
DDE	9	55	0	0
DDT	12	139	0	0
DDVP (dichlorvos)	1	10	0	0
Deethyl-atrazine (DEA)	2	66	0	5
Desmethylnorflurazon	2	66	0	29
Diaminochlorotriazine (DACT)	2	66	0	55
Diazinon	38	514	1	0
Dicamba	33	562	0	0
Dichlorprop, butoxyethanol ester	11	124	0	0
Dieldrin	32	477	0	0
Dimethoate	38	588	0	0
Dinoseb	34	597	0	0
Diphenamid	1	1	0	0
Diquat dibromide	31	562	0	0
Disulfoton	1	23	0	0
Diuron	17	174	0	34
Endosulfan	8	53	0	0
Endosulfan sulfate	8	53	0	0
Endothall	29	545	0	0
Endrin	34	544	0	0
Endrin aldehyde	8	53	0	0
EPTC	3	7	0	0
Ethylene dibromide	38	1560	16	0
Fonofos (dyfonate)	1	23	0	0
Glyphosate, isopropylamine salt	28	442	0	0
Heptachlor	34	539	0	0
Heptachlor epoxide	34	539	0	0
Hexachlorobenzene	35	557	0	0

Chemical	Number of Counties Sampled	Number of Wells Sampled	Number of Wells with Unverified Detections	Number of Wells with Verified Detections
Hexazinone	2	66	0	0
Lindane (gamma-BHC)	34	535	1	0
Linuron	1	23	0	0
Malathion	1	53	0	0
MCPA, dimethylamine salt	1	9	0	0
MCPP	1	9	0	0
Merphos	1	10	0	0
Methiocarb	20	246	0	0
Methomyl	33	511	0	0
Methoxychlor	34	553	0	0
Methyl bromide (bromomethane)	54	1841	2	0
Methyl parathion	1	53	0	0
Metolachlor	38	726	1	0
Metribuzin	38	729	1	0
Mevinphos (phosdrin)	1	10	0	0
Molinate	39	863	1	0
Naphthalene	49	1815	1	0
Napropamide	1	1	0	0
Norflurazon	2	66	0	15
Ortho-dichlorobenzene	54	2413	0	0
Oxamyl	33	551	0	0
Paraquat dichloride	6	71	0	0
Parathion or ethyl parathion	1	53	0	0
Pendimethalin	1	1	0	0
Pentachloronitrobenzene (PCNB)	1	11	0	0
Permethrin	5	16	0	0
Permethrin, other related	4	15	0	0
Picloram	34	586	0	0
Prometon	7	160	0	1
Prometryn	36	427	1	0
Propachlor	35	707	0	0
Propazine	2	2	0	0
Propoxur	16	154	0	0
Secbumeton	1	28	0	0
Simazine	40	1197	1	48
Simetryn	1	1	0	0
Terbacil	6	40	0	0
Terbutryn	2	29	0	0
Thiobencarb	39	1015	1	0
Toxaphene	34	537	0	0

Chemical	Number of Counties Sampled	Number of Wells Sampled	Number of Wells with Unverified Detections	Number of Wells with Verified Detections
Triadimefon	1	1	0	0
Trichlorobenzenes	54	2155	0	0
Trifluralin	19	84	0	0
Vernolate	1	1	0	0
Xylene	54	2410	6	0

Status of Pesticides with Verified Detections

Detections were verified in 61 wells in two counties. Table I-5 summarizes, by county and pesticide, the number of wells with verified detections.

Table I-5. Summary, by county and pesticide, of the number of wells with verified detections. Results are for data reported from July 1, 2006, to June 30, 2007.

County	Atrazine	DEA	Bromacil	Diuron	Norflurazon	Desmethylnorflurazon	Prometon	Simazine	ACET	DACT	Total Number of Wells
Fresno	2	3	15	22	13	22	1	34	40	40	43
Tulare	1	2	10	12	2	7	0	14	15	15	18
Total Number of Wells with Detections	3	5	25	34	15	29	1	48	55	55	61

The tables below summarize the year's major uses and total pounds applied in California for the AI of the pesticides that had verified detections of the parent compound or its breakdown products. Maximum contaminant levels and health advisory levels for each compound were obtained from the Central Valley Regional Water Quality Control Board's Compilation of Water Quality Goals, August 2007. The pesticide use information in the following tables was obtained from the 2006 pesticide use report database (PUR).

Atrazine

Atrazine is a selective herbicide primarily used for corn, sudangrass and Bermuda grass. This compound is listed on the 6800(a) list of compounds that have been found in California ground water. DPR regulations require users who apply compounds on this list in leaching and runoff GWPAs to follow one of the specified management practices (see section on pesticide management practices) to prevent movement to ground water. The highest residue level of atrazine verified by DPR was 0.10 ppb. CDPH and U. S. EPA have established an MCL for atrazine at 1 ppb.

Table I-6. Major uses of atrazine reported in 2006.

Site	Pounds
Sudangrass (forage – fodder)	10,571
Forest trees, forest lands	8,970
Corn (forage - fodder)	5,354
Corn, human consumption	5,349
Bermuda grass (forage - fodder)	1,000
Sorghum/milo general	829
All other	1,125

Bromacil

Bromacil is a soil-applied herbicide primarily used as a general herbicide for weed control in rights-of-way and a selective herbicide in citrus crops. Bromacil is listed on the 6800(a) list of compounds that have been found in California ground water. DPR regulations require users who apply compounds on this list in leaching and runoff GWPAs to follow one of the specified management practices (see section on pesticide management practices) to prevent movement to ground water. The highest residue level of bromacil verified by DPR was 5.17 ppb. No MCL has been established for bromacil. U. S. EPA has established a drinking water suggested no-adverse-response level (SNARL) for bromacil at 70 ppb.

Table I-7. Major uses of bromacil reported in 2006.

Site	Pounds
Rights Of Way	37,261
Orange (All or unspecified)	17,423
Grapefruit	2,151
Lemon	2,119
Landscape Maintenance	1,434
Tangerine	642
All other	1,483

Diuron

Diuron is a pre- and early post-emergent soil-applied herbicide. Its major uses are as a general herbicide controlling weeds in rights-of-way, and as a selective herbicide in alfalfa and citrus crops. Diuron is listed on the 6800(a) list of compounds that have been found in California ground water. DPR regulations require users who apply compounds on this list in leaching and runoff GWPAs to follow one of the specified management practices (see section on pesticide management practices) to prevent movement to ground water. The highest residue level of diuron verified by DPR was 1.01 ppb. No MCL has been established for diuron. The U.S. EPA SNARL is 21 ppb.

Table I-8. Major uses of diuron reported in 2006.

Site	Pounds
Rights Of Way	374,054
Alfalfa (Forage - Fodder)	266,113
Orange (All or unspecified)	145,308
Landscape Maintenance	57,249
Walnut (English Walnut, Persian Walnut	38,229
Cotton, general	34,689
All other	132,710

Norflurazon

Norflurazon is a soil-applied selective herbicide used primarily to control grasses and broadleaf weeds in alfalfa, and tree, citrus and vine crops. Norflurazon is listed on the 6800(a) list of compounds that have been found in California ground water. DPR regulations require users who apply compounds on this list in leaching and runoff GWPAs to follow one of the specified management practices (see section on pesticide management practices) to prevent movement to ground water. The highest residue level of norflurazon verified by DPR was 1.29 ppb. No MCL has been established for norflurazon. The U.S. EPA Integrated Risk Information System (IRIS) reference dose is 280 ppb

Table I-10. Major uses of norflurazon reported in 2006.

Site	Pounds
Alfalfa (Forage - Fodder) (Alfalfa	23,430
Almond	20,812
Tangerine (Mandarin, Satsuma, Murc	14,840
Grapes	12,570
Rights Of Way	8,698
Orange (All Or Unspec)	6,269
All Other	18,659

Prometon

Prometon is a non-selective soil applied herbicide used to control annual, perennial broadleaf weeds, and grasses. Prometon is listed on the 6800(a) list of compounds that have been found in California ground water. DPR regulations require users who apply compounds on this list in leaching and runoff GWPAs to follow one of the specified management practices (see section on pesticide management practices) to prevent movement to ground water. The highest residue level of prometon verified by DPR was 0.091 ppb. No MCL has been established for prometon. The U.S. EPA HAL is 100 ppb.

Table I-11. Major uses of prometon reported in 2006.

Site	Pounds
Walnut	5
Rights Of Way	2
Landscape Maintenance	1

Simazine

Simazine is a soil applied selective herbicide that can be used at higher rates as a general herbicide. Its major uses are controlling grass and broadleaf weeds in citrus, vine and nut crops and in rights or way. Simazine is listed on the 6800(a) list of compounds that have been found in California ground water. DPR regulations require users who apply compounds on this list in leaching and runoff GWPAs to follow one of the specified management practices (see section on pesticide management practices) to prevent movement to ground water. The highest residue level of simazine verified by DPR was 0.208 ppb. CDPH and U. S. EPA have established an MCL for simazine at 4 ppb

Table I-12. Major uses of simazine reported in 2006.

Site	Pounds
Orange (All Or Unspec)	171,801
Grapes, Wine	121,090
Grapes	102,695
Rights Of Way	70,524
Walnut	49,745
Almond	46,448
All Other	58,757

Status of Unverified Detections

DPR investigates wells with unverified detections of registered pesticides, unless (1) the detected residue is from a compound that is listed on the 6800(a) list of known ground water contaminates and the detection occurred in a GWPA or (2) the detection is below 80 percent of the MDL established by a lab approved by DPR.

The status of all positive samples (verified and unverified) added to the database is summarized in Appendix C. This appendix also includes the historical range of concentrations for compounds detected in ground water and, if a detection occurred, the detection levels reported during this fiscal year, from July 1, 2006, to June 30, 2007. Of the 103,352 records added to the well inventory database this year, there were 61 verified detections and 350 unverified detections from 3,290 wells in 56 counties for a total of 32 pesticide-related compounds. Ninety-seven percent of the unverified detections were of 11 chemicals not registered in California or not registered for agricultural use. The chemicals were 1,2-dichloropropane; benzene; butachlor; carbon disulfide; chloromethane; DBCP; dioxin, ethylene dibromide; lindane; naphthalene and xylene.

CDPH reported detections of 2,4-D, alachlor, and methyl bromide (2 wells). An additional well was reported with alachlor, atrazine, diazinon, metolachlor, metribuzin, molinate, prometryn, simazine, and thiobencarb. DPR's investigation into one of the methyl bromide detections, and all of the detections in the multi-residue well determined that the reported residues were in error based on the actual reports from the analyzing laboratory. The well with the 2,4-D detection was resampled shortly after the initial report of residue and this residue was not detected in the retested samples. The initial reported detection was assumed to be erroneous. The remaining alachlor and methyl bromide detections are currently being investigated by DPR.

II. PREVENTION OF PESTICIDE MOVEMENT TO GROUND WATER AS A RESULT OF LEGAL AGRICULTURAL APPLICATIONS

Discussion

Pesticides in soil gradually disappear from the site of deposition in a number of ways including photolysis; volatilization; microbial degradation; chemical degradation, such as hydrolysis; leaching; or runoff. Some pesticides can move to ground water through runoff or leaching. Once ground water contamination occurs it is very difficult and costly to remove the pesticide residue. Therefore, the best way to protect ground water is to regulate pesticide use before contamination occurs.

The Pesticide Contamination Prevention Act requires DPR to take regulatory action to protect ground water only after a pesticide has been detected in ground water due to legal, agricultural use. Once a pesticide is found in ground water, the director may determine that use can be modified to minimize the probability that the pesticide will pollute the ground waters of the state. Initially, DPR adopted use modifications that applied only where pesticides were found in ground water because vulnerability was only associated with detections. In some cases, the detected pesticide was prohibited in vulnerable areas. However, users often substitute other pesticides with the same environmental fate characteristics. As a result, eventually the substituted pesticide can also move to ground water.

Over time, DPR and other agencies have sampled many wells under a variety of soil, depth-to-ground water, and climatic conditions. As this monitoring data accumulated in the well inventory database, DPR was able to begin analyzing the relationship between detections and these other factors to determine if vulnerability could be determined before contamination actually occurs. In the 1990's, DPR scientists were able to develop the CALVUL modeling approach, which was used to determine vulnerable areas in California based on soil characteristics and depth-to-ground water data. Information on the CALVUL modeling approach can be found at http://www.cdpr.ca.gov/docs/gwp/index.htm. This approach related geographical factors to areas with known ground water contamination (Troiano, et al., 1994). Each section of land for which soil and depth-to-ground water data was available was screened to determine if it fit any of the profiles that characterize vulnerable areas.

DPR has identified two mechanisms of movement to ground water in these vulnerable areas. In coarse, permeable soils, residues leach with water during normal percolation processes; in less permeable soils with a hardpan layer, residues are moved offsite in runoff water to sensitive sites (Braun and Hawkins, 1991). Pesticide application management practices were developed based on the predominant soils in these vulnerable areas (Troiano et al., 2000). Sections of land meeting the vulnerable profiles and for which mitigation measures are available were designated GWPAs (Troiano, et al., 1997). DPR has identified 3,718 GWPAs as sections in coarse or hardpan soil clusters that have depth-to-ground water at 70 feet or shallower. In addition, all previous PMZs not classified by CALVUL were designated GWPAs. Effective May 27, 2004, DPR's new regulations allow continued use of ground water contaminants only if users can comply with new use restrictions (management practices) in GWPAs, inside canal and ditch banks, and in artificial recharge basins.

The following section summarizes the factors that contribute to pesticide movement to ground water and provides details of the management practices specified in regulation that will help to prevent contamination of ground water.

Factors that Contribute to Pesticide Movement to Ground Water

Pesticide Factors

The physical and chemical characteristics thought to be important in movement through soil are water solubility, soil adsorption coefficient, anaerobic and aerobic soil metabolism, hydrolysis and field dissipation. Under FAC section 13144, DPR is required to establish SNVs for these characteristics. To date, the SNVs have been established for water solubility, soil adsorption (Koc), and half-lives for hydrolysis, aerobic and anaerobic soil metabolism by comparing the values for pesticides found in ground water to values for pesticides sampled for but not detected in ground water (Johnson 1991). When a value exceeds the SNV for water solubility or it is less than the SNV for Koc, the pesticide is considered mobile. When a value exceeds the half-life SNVs for hydrolysis or soil metabolism, the pesticide is considered persistent. Pesticides that are both mobile and persistent are determined to have the potential to pollute ground water when they are applied directly to soil or by chemigation, or whose application is recommended or required by the label to be followed by flood or furrow irrigation within 72 hours.

Soil Characteristics

Soil characteristics that affect the movement of pesticides and subsequently the potential to contaminate ground water are:

1. The soil's water-holding and water retention properties.
2. Potential for compaction of the surface soil.
3. Soil components that bind with and retard movement of pesticide residues.
4. Presence of soil microbes that degrade pesticide residues.

Two soil properties that affect water-holding capacity are soil texture and organic carbon content. With respect to texture, water percolates to ground water much quicker in coarse-textured sandy soils than in clayey soils (Vereecken, et al., 1988). Coarse-textured soils have larger pore sizes, which allow for greater effect of gravitational forces to pull water down through the soil profile, as compared to clayey soils where the smaller pore sizes allow greater binding of water to soil particles, causing greater water retention. The organic carbon component of soil retains a large amount of water when wetted, so soils with higher organic carbon content will also have greater retention of water. Organic carbon content has been included as a variable in equations to describe water-holding capacity of soils (Rawls and Brankensiek, 1985). Surface soil compaction is another property that affects pesticide movement to ground water Soils that are prone to compaction will shed water as runoff. Runoff water can contain residues of pesticides that eventually contaminate California's ground water (Braun and Hawkins, 1991). In areas prone to surface soil compaction, surface water is often collected and diverted to more porous subsurface soil to relieve potential flooding that could damage crops. In this situation, the potential for ground water contamination is high because water shunted to subsurface soil bypasses the principal soil microbial zone where most degradation of pesticide residues occurs.

Reaction of soil components with pesticide residues also affects pesticide movement through soil. Although the physical-chemical nature of a pesticide determines how likely it will interact

with soil components, the amount of pesticide that reacts with soil is determined by the organic carbon content, and to a lesser extent the clay content, present in a soil (Mingelgrin and Gerstl, 1983). Numerous studies have indicated the importance of organic carbon content in sorption of pesticide residues where the amount of pesticide adsorbed per unit of soil directly increases as organic carbon content increases. Greater adsorption of pesticide residues results in less available for downward movement through the soil profile. Many soils in California are vulnerable to leaching because they are low in organic carbon content. Clay particles can be important because they react with pesticides that contain ionic charges. For example, paraquat is highly polar and is highly reactive with the negative sites on the clay particles.

For pesticides that are incorporated into soil, the predominant pathway for degradation is metabolism by soil micro-flora, primarily bacteria and fungi. Thus, conditions that favor the presence and activity of soil micro-flora will also enhance degradation. For example, biological activity generally increases with increasing temperature so pesticides applied in cooler winter months will persist longer than pesticides applied in hotter summer months. Often, the soil micro-flora adapts to pesticide applications as indicated by faster rates of degradation measured after successive applications of pesticides (Suett and Jukes, 1988). Maintaining soil conditions that nurture soil microbial populations is important in ensuring fastest rates of biological degradation

Irrigation Practices

Pesticide residues can move with water that percolates into soil and eventually recharges ground water. The source of recharge water is either from natural rainfall or from irrigation used in crop production. Most areas of California experience a Mediterranean climate where most rainfall occurs during the late fall and winter months and with very little rainfall during the rest of the year. The relative potential for downward movement of pesticide residues caused by rainfall and then by irrigation was investigated by DPR scientists in the 1980's. First, the effect of rainfall on the movement of simazine was studied on a sandy soil in Fresno (Troiano and Garretson, 1988). Simazine was applied in November of 1987, exposed to the winter rains, and the soil cored to 10 feet in May of 1988. During that period, the site received 10 inches of natural rainfall, which also is the average rainfall in that area. Most simazine residues were confined to the first six inches of soil, indicating that the amount of percolating water produced during the winter months was not sufficient to cause significant downward movement of the residues. This is due to the pattern of rainfall where the 10 inches of water received by the experimental site was spread out over a number of months and with many rainfall events of one inch and below. In coarse textured soils, this pattern of water deposition allows for greater loss of water to evaporation rather than to percolation and thus results in limited downward movement of water and consequently pesticide residues. Similar results were observed in a rainfall study conducted in Riverside (Neal, et al., 1991).

Pesticide residues have been detected in ground water in areas with coarse-textured soils, indicating movement with water that recharges the ground water aquifer. The pattern of irrigation water applications is in stark contrast to precipitation events. Large amounts of water can be applied during each irrigation event, resulting in much larger potential losses of water to percolation. In a follow-up study, the influence of method and amount of irrigation water application was investigated on the movement of atrazine, a pre-emergent herbicide detected in

ground water (Troiano, et al., 1993). This study demonstrated the effect that percolating water produced by irrigation has on downward movement of pesticide residues. Water treatments were based on a proportional measurement of reference crop evapotranspiration so that the smallest proportion produced the least amount of percolating water. There was a positive relationship between the proportioned water treatments and downward movement of atrazine; the smallest proportion produced the least amount of percolating water and the least downward movement of atrazine residues whereas the largest proportion produced the greatest downward movement of water and atrazine. Although this relationship was similar for different methods of irrigation water, the exact method of irrigation further affected the magnitude of atrazine leaching. For example, sprinkler irrigation was more effective than basin-flooding irrigation in limiting the downward movement of water and, subsequently, atrazine residues. Leaching was less in sprinkler applications because water could be applied more frequently in smaller applications than for the basin-flooding method. For basin-flooding treatments, a large amount of water application was required during each irrigation event in order to provide application across the plot. Although irrigations were less frequent, the larger water volume caused greater downward movement of water and atrazine residues.

Climate

Another important contributing factor is regional climate, such as precipitation. In Del Norte County, the average annual rainfall is about 75 inches. One study, conducted in this region to determine downward movement of the pesticide fenamiphos attributed heavy rainfall to fenamiphos residue moving well below the zone of application (Weaver, et al., 1988). Forty-two inches of rain fell between the time fenamiphos was applied in October and the first soil cores were collected in March. Another study used parameters from the Smith River Plains area in Del Norte County to input information into a computer model to simulate subsurface migration of a number of pesticides (Warner, et al., 1989). Concentrations of fenamiphos measured in the field study were compared with simulated concentrations generated from the computer model. Graphs of the measured and simulated values matched closely. In one particular simulation, staggering the application date of the pesticide by fifteen days resulted in the pesticide migrating deeper for all three years of the simulation. The difference in simulations was attributed to how closely the application date coincided with precipitation. However, in the 1988 Troiano and Garretson study in Fresno County, the 10 inches of rain received was insufficient to move the major portion of simazine beyond the first six inches of sandy soil.

Pesticide Application Management Practices

The ground water regulations include application management practices, which are specific to runoff and leaching GWPAs, engineered rights-of-ways within GWPAs, and inside canals and ditch banks and artificial recharge basins statewide. A runoff GWPA is associated with low infiltration rate soils that facilitate runoff and a leaching GWPA is associated with sandy soils where leaching can occur. Application management practices in hardpan soil (runoff) areas are as follows:

Runoff GWPAs

Use of 6800(a) pesticides is prohibited in runoff GWPAs unless one of the following management practices can be met and is designated by the County Agricultural Commissioner on the permit.

(a) Soil disturbance. Within seven days before the pesticide is applied, the soil to be treated shall be disturbed by using a disc, harrow, rotary tiller, or other mechanical method. This practice does not apply to bentazon, does not apply to the area to be treated that is immediately adjacent to the crop row and that does not exceed 33 percent of the distance between crop rows, and does not apply out to the drip line in citrus; or

(b) Incorporation of the pesticide. Within 48 hours after the day the pesticide is applied, the pesticide shall be incorporated on at least 90 percent of the area treated, using a disc, harrow, rotary tiller, or other mechanical method, or by sprinkler or low flow irrigation, including chemigation if allowed by the label. The irrigation should be applied using a minimum of ¼ inch of irrigation water and a maximum of either one inch or the maximum amount of irrigation water specified on the label, at application rates that do not cause surface water runoff from the treated property or to wells on the treated property. This practice does not apply to bentazon, does not apply to the area that is immediately adjacent to the crop row and that does not exceed 33 percent of the distance between crop rows, and does not apply out to the drip line in citrus; or

(c) The pesticide shall be applied as a band treatment immediately adjacent to the crop row so that not more than 33 percent of the distance between rows is treated except in citrus where the treated band may extend out to the drip line of the tree; or

(d) The pesticide shall be applied between April 1 and July 31; or

(e) For six months following the application, the field shall be designed, by berms, levees, or non-draining circulation systems, to retain all irrigation runoff and all precipitation on, and drainage through, the field. The retention area on the field shall not have a percolation rate of more than 0.2 inches per hour (five inches per 24 hours) unless the drainage water is recirculated onto the field or an adjacent field under certain conditions every 24 hours; or

(f) For six months following the application, runoff shall be channeled to a holding area off the application site, under the control of the property operator, that is designed to retain all irrigation runoff and all precipitation on, and drainage through, the treated field and all other areas draining into that holding area. The holding area shall not have a percolation rate of more than 0.2 inches per hour (five inches per 24 hours); or

(g) Runoff onto a fallow field. For six months following application, runoff shall be managed so that it runs off onto an adjacent unenclosed fallow field at least 300 feet long that is not irrigated for six months after application, with full consideration of any plant back restrictions; or

(h) Tops and Outer Banks of Canals and Rights of Way, within Runoff GWPAs
Use of pesticides registered for agricultural, outdoor industrial, and outdoor institutional use containing chemicals listed in section 6800(a) may be applied to the tops and outer banks of canals and to rights of way within runoff GWPAs where runoff from the treated site flows to an area equal in size to the area treated, slowly infiltrates into the soil, and does not move to ditches, dry wells, or permeable retention areas.

(i) An alternative management practice or pesticide approved by the Director as follows:

i. Upon written request, the Director may evaluate and approve use of alternative management practices that are based on scientific data demonstrating their effectiveness in reducing movement of pesticides to ground water; or

ii. Upon written request, the Director may make a determination to allow the interim use of a pesticide containing a chemical listed in section 6800(a) in a runoff

GWPA, for a period not to exceed three years, while the requestor is documenting an alternate management practice according to a protocol approved by the director. This option is only available if none of the existing management practices are feasible for a given crop or site.

Leaching GWPAs

Use of 6800(a) pesticides is prohibited in leaching GWPAs unless any one of the following management practices can be met and is designated by the commissioner on the permit:

(a) The permittee shall not apply any irrigation water for six months following application of the pesticide; or
(b) The permittee shall apply the pesticide to the planting bed or the berm above the level of irrigation water in the furrow or basin for six months following application of the pesticide; or
(c) Irrigation shall be managed so that the ratio of the amount of irrigation water applied divided by the net irrigation requirement is 1.33 or less for six months following application of the pesticide; or
(d) An alternative management practice or pesticide approved by the Director.

Artificial Recharge Basins

Use of pesticides registered for agricultural, outdoor industrial, and outdoor institutional use containing chemicals listed in section 6800(a) shall be prohibited below the high water line inside artificial recharge basins, unless the pesticide is applied six months or more before the basin is used to recharge ground water.

Inside Canals and Ditch Banks

Use of pesticides registered for agricultural, outdoor industrial, and outdoor institutional use containing chemicals listed in section 6800(a) shall be prohibited below the high water line inside unlined canals and ditches, unless at least one of the following applies:
(a) The pesticide user can document that the percolation rate of the canal or ditch is equal to or less than 0.2 inches per hour (0.002 gallons per minute per square foot); or
(b) The pesticide is applied six months before water is run in the canal or ditch.

Engineered Rights-of-Ways Within GWPAs

Use of pesticides registered for agricultural, outdoor industrial, and outdoor institutional use containing chemicals listed in section 6800(a) shall be prohibited on engineered rights-of-way in leaching or runoff ground water protection areas unless one of the following management options can be met and is designated by the commissioner on the permit:
(a) The property operator complies with one of the management practices specified for runoff GWPAS; or
(b) Any runoff from the treated right-of-way shall pass through a noncrop fully vegetated area adjacent, and equal in area, to the treated area; or
(c) The property operator complies with any permit issued pursuant to the storm water provisions of the federal Clean Water Act pertaining to the treated area; or
(d) An alternative management practice or pesticide approved by the Director.

III. ACTIONS TAKEN BY DPR TO PREVENT MOVEMENT OF PESTICIDES TO GROUND WATER

Pesticide Detection Response Process (PDRP)

The PDRP is a process where detections of pesticide active ingredients currently registered for agricultural use or their breakdown products are investigated, evaluated and mitigated, when necessary. Historically, DPR responded to any reported detection in ground water if the detected pesticide was currently registered for agricultural use. The response to many of these detections was to sample five or six wells in a four-section area around the contaminated well. However, due to shrinking resources, DPR has established policies that allow for greater scrutiny of the detection before it is entered into the PDRP.

Each year DPR receives reports of detections from various agencies. Occasionally, MDLs for some pesticides from submitted studies are below the MDLs obtainable by DPR laboratories. DPR's policy (memo from John Sanders to EM, July 2002) is not to confirm or verify detections with reported concentrations less than 80 percent of the current MDL established by the CDFA laboratory. In addition, DPR does not confirm or verify detections of pesticides listed in 6800(a) or their breakdown products when the detection occurs within a GWPA because DPR adopted regulations that mitigate the environmental effects of 3CCR section 6800(a) compounds within these areas. As in the past, DPR enters all detections into the well inventory database for use in future analyses.

For detections entered into the PDRP, the investigative phase includes verification of the reported detection and a determination of agricultural use. Some of the investigative activities include determining whether:

- The application of the pesticide in the vicinity of the detection was reasonably likely;
- A point source was not a likely cause;
- A non-agricultural use of the pesticide was not a likely source; or
- A non-pesticide source was not a likely cause.

DPR combines an analysis of pesticide use in the area where the detection occurred with land use and a four-section survey (see below) to help determine if the detection is due to legal agricultural use.

Four-Section Survey

The four-section survey is a well monitoring survey conducted to determine if there is a second contaminated well in the same area as the reported positive well. This helps to determine that the residue did not result from a point source. Samples are taken from the five or six wells in the section of land of the original detection or one or more of the three most adjacent sections, and analyzed in order to confirm the initial detection. The location of a second positive well is an indication that the detected residue may be the result of legal agricultural use and thus subject to the formal review process specified in FAC section 13149.

Verified detections of pesticide residues that are determined to be due to agricultural use and that have not been previously formally reviewed by the Director are subject to special review specified in FAC section 13150. The purpose of the review is to determine whether continued

registration, sale, and use of the compound will be allowed. A subcommittee of the Pesticide Registration and Evaluation Committee holds a hearing, evaluates information, and makes recommendations to the Director of DPR, who then makes a determination regarding continued use of the compound in California.

DPR conducted one four-section survey between July 1, 2006, and June 30, 2007, in response to reported detection of methomyl. The original well was resampled and no pesticide residues were detected. The results for two studies for aldicarb breakdown products conducted before June 30, 2006 became available during this report cycle. No aldicarb or breakdown products were detected in any of the sampled wells.

Table III-1 details the pesticide residues reported to DPR that, upon initial investigation, were found to be a either a reporting error or a false positive detection that could not be confirmed by follow-up sampling conducted by the original sampling agency.

Table III-1. Detections that did not require further investigation.

County	Chemical	Comments
Los Angeles	Methyl bromide	Analyzing laboratory reported no methyl bromide residues in their original report.
Riverside	Alachlor, atrazine, diazinon, metolachlor, metribuzin, molinate, prometryn, simazine, and thiobencarb	Original sample was small and needed to be diluted to reach sufficient volume for testing. The original sample container was not intact. Results should not have been reported to CDPH. Subsequent retesting one month later had no pesticide residues.
Sacramento	2,4-D	The analyzing laboratory confirmed initial reported residues. Subsequent retesting two months later had no pesticide residues. There is no history of pesticide residues in this well.

Ground Water Protection List Monitoring

The GWPL is a list of pesticides having the potential to pollute ground water. It was established according to FAC section 13145(d) and placed in section 6800 of Title 3 of the California Code of regulations (3CCR). The GWPL is divided into sub-lists (a) and (b). Section 6800(a) is comprised of chemicals detected in soil or ground water as a result of legal, agricultural use. Section 6800(b) includes chemicals that exceed the SNVs and (1) are intended to be applied to or injected into the soil by ground-based application equipment or by chemigation; or (2) where the pesticide labels recommend or require their application to be followed, within 72 hours, by flood or furrow irrigation. To determine whether the pesticides listed in 6800(b) have migrated to ground water, DPR is required to conduct ground water monitoring for them.

In 1992, 47 pesticide AIs were placed in section 6800(b). Regulations that became effective on May 13, 1999, added 15 new AIs to section 6800(b), bringing the total number of AIs on the list to 62. Since resource limitations preclude concurrent annual monitoring of all 62 pesticides, DPR monitors the pesticides with the greatest potential to pollute groundwater. Candidate pesticides are selected based on their physicochemical characteristics, agricultural production practices for crops on which they are applied, target of application (soil versus foliar), information on recent detections in ground water and any other pertinent information.

In 2006, the EM Branch of DPR completed a GWPL monitoring survey for aldicarb. Forty-seven wells were sampled in eight counties during February through May 2006. No residues of aldicarb, or its breakdown products aldicarb sulfone and aldicarb sulfoxide, were detected in any of the wells. The total number of wells that were sampled in each county is presented in Table III-2.

Table III-2. Number of wells sampled in each county during the GWPL monitoring survey for aldicarb.

County	Wells Sampled
Colusa	4
Fresno	7
Glenn	1
Kings	12
Madera	4
Merced	8
Tulare	7
Yolo	4
Total	47

Well Network Monitoring -- Monitoring Temporal Changes in Concentrations of Detected Herbicides and Their Degradates

The regulations are more preventative than the past program because application management practices are implemented in areas determined to be vulnerable to pesticide contamination but where pesticide residues have not yet been detected in ground water. One measure of success of the program will be to observe temporal changes in pesticide concentrations in wells that are known to contain residues. Beginning in 1999, DPR has sampled a group of 70 domestic wells in Fresno and Tulare counties. These wells were selected because previous sampling resulted in verified detections of one or more pesticides and because they are located in soil conditions identified as vulnerable to pesticide contamination.

The data gathered before the new regulations went into effect will be background data used to compare detected concentrations with concentrations after the new regulations were adopted. However, the effects of changing application management practices may not be discernible for at least a decade (Spurlock et al., 2000).

Probabilistic Modeling for Risk Assessment of Ground Water Contamination by Pesticides

During the review of pesticide products for registration, the EM Branch receives requests from the Pesticide Registration Branch to evaluate the potential for ground water contamination by

pesticides. The evaluations are typically conducted based on concerns about the physical-chemical properties of new active ingredients or new use patterns of older active ingredients. EM scientists have developed a probabilistic modeling approach to evaluate the potential of pesticides to reach ground water in vulnerable California soils (Troiano and Clayton, 2004).

From July 1, 2006, through June 30, 2007, EM scientists used the probabilistic modeling approach to evaluate the environmental fate of nine pesticide products formulated from three active ingredients, which were submitted for California registration. These active ingredients were aminopyralid, sulfosulfuron and sulfentrazone. Products containing aminopyralid and sulfosulfuron were determined to present a negligible threat to California ground water. The sulfentrazone products intended for residential use but also containing some agricultural defined uses were considered a negligible threat to ground water, following amendments to product label use language. Other products containing sulfentrazone are under further evaluation.

A study was initiated in 2007 with the objective to develop a data set to recalibrate the LEACHM pesticide fate model currently used in EM's probabilistic modeling scenario. The current modeling scenario assumes the pesticide degradation rates are constant with soil depth. These degradation rates are derived from studies conducted in soils near the soil surface that contain organic matter and typically yield relatively rapid breakdown rates. Recalibration will consist of establishing depth-specific breakdown rates for simazine and diuron based on studies indicating that slower soil abiotic hydrolytic processes rather than biotic degradation processes dominate pesticide dissipation at soil depths low in organic matter content. The fieldwork for this study has been completed. Analytical chemistry work is in progress. Data analysis and reporting of results will occur in 2008.

Chemigation Initiative

Chemigation is the application of pesticides through irrigation systems. As a result of the U.S. EPA's Label Improvement Program, pesticide labeling requires the use of specific backflow prevention devices to protect ground- or surface water sources when pesticides are applied through an irrigation system. DPR recently completed an active chemigation training program that educated growers, pest control operators, irrigation dealers, and state and local pesticide use enforcement staff on system engineering, safe handling practices and regulatory requirements. As a result, people who use, install, and regulate chemigation systems are better able to detect and correct problems before environmental damage occurs.

To evaluate chemigation-related educational and regulatory needs, DPR established a task force of irrigation specialists, backflow prevention equipment manufacturers and dealers, representatives from the agricultural community, engineers with expertise in backflow prevention, representatives from the county agricultural commissioners, and other interested parties. The task force met three times between July 1, 2005, and June 30, 2006, to develop recommendations for adopting new chemigation regulations, alternative chemigation devices and best management practices for the timing and application of pesticides through irrigation systems. DPR is considering options for implementing the Task Force's recommendations.

Chemigation Study

Starting in 2004/2005, the EM Branch contracted with CIT to develop data on the effectiveness of chemigation and to demonstrate the application of preemergence herbicides through low-volume irrigation systems. For fiscal year 2004/2005, this was a cooperative study that included two citrus growers, registrants of simazine (Syngenta) and diuron (Griffin, LLC), DPR, and CIT technical staff (Troiano, 2003). An important aspect of the study was to develop data demonstrating the effectiveness of chemigation. A proven method of change in the agricultural sector is to introduce the practice to a small segment of growers and test it for effectiveness on their property. Demonstrations are then conducted focusing on the grower's experience with the adoption of the practice. Two citrus growers who participated in study indicated that the control achieved through chemigation was very effective. Furthermore, the study resulted in the registrants requesting, with a letter of support from Citrus Mutual, and receiving a Special Local Need registration, which allows chemigation of simazine and diuron through micro-sprinkler irrigation systems on citrus. The results of that study were reported by Basinal et al. (2005) and are available at: http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/eh0701.pdf

The study was expanded from small experimental plots to the larger commercial blocks. The objective was to demonstrate the effectiveness of this application as a part of the normal farm management system. Two growers from the previous study cooperated in this larger application of chemigation methodology. The applications were made to tree rows but the growers had different approaches to managing the middles. One grower had a cover crop while the other grower used a contact herbicide to control weed growth in the row middles. Control was acceptable at both sites and the chemigation applications fit in both approaches (DaSilva, 2007).

Further investigations and demonstrations are planned to include other crops. Currently, the Special Local Need registration is only for use on citrus but both herbicides have a much wider range of use on deciduous tree fruit and nut crops and on grapes. The next study in 2007/2008 is planned to include deciduous tree crops where the soils are coarse-textured.

Chemigation Training

DPR contracted with the Center for Irrigation Technology (CIT) at California State University, Fresno to provide chemigation training to the regulated community. In 2006-07, CIT provided 44 chemigation training sessions for pesticide handlers, irrigation dealers, and enforcement staff. Since 2001, CIT and DPR have provided 190 chemigation training sessions throughout California to growers, irrigation dealers, and pest control operators, as well as to county agricultural commissioner and DPR enforcement staff. These training sessions focused on backflow prevention devices and their alternatives, which are required to be installed on any chemigation system. The sessions included a manual to help growers understand and comply with the requirements, and a demonstration trailer that includes an irrigation supply line equipped with the required backflow prevention devices and some of their alternatives. The manual can be accessed at http://www.cdpr.ca.gov/docs/emon/grndwtr/chem/grower_manual.pdf

IV. ACTIONS TAKEN BY THE SWRCB AND Its REGIONAL BOARDS TO PREVENT PESTICIDES FROM ENTERING GROUND WATER NOVEMBER 2007.

The fourth section is a summary of the SWRCB's and the Regional Water Quality Control Board's (RWQCB) monitoring activities and is available at:
http://www.waterboards.ca.gov/gama/docs/ab2021_fy0607.pdf

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APPENDIX A

Number of Wells Sampled and Positive Detections, by County and Chemical

This appendix lists the counties sampled for the period July 1, 2006, through June 30, 2007. Counties with pesticide detections during this period are marked with an asterisk. For electronic versions of this report, clicking on the county name at the top of the first page of each individual table will bring you back to this page

Counties Sampled for This Report

Alameda	Marin	San Mateo*
Amador	Mariposa*	Santa Barbara
Butte	Mendocino*	Santa Clara
Calaveras	Merced*	Santa Cruz*
Colusa	Modoc	Shasta*
Contra Costa*	Mono	Sierra
Del Norte	Monterey*	Siskiyou
El Dorado*	Napa	Solano
Fresno*	Nevada	Sonoma*
Glenn	Orange	Stanislaus*
Humboldt	Placer*	Sutter
Imperial	Plumas	Tehama
Inyo*	Riverside*	Trinity
Kern*	Sacramento*	Tulare*
Kings*	San Benito	Tuolumne
Lake	San Bernardino*	Ventura*
Lassen	San Diego	Yolo*
Los Angeles*	San Joaquin*	Yuba*
Madera*	San Luis Obispo*	

Alameda	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	24	
	1,2,4-Trichlorobenzene	24	
	1,2-D + 1,3-D + C-3 compounds	24	
	1,2-Dichloropropane	24	
	2,3,7,8-TCDD (dioxin)	17	
	2,4,5-TP (silvex)	15	
	2,4-D	15	
	3-Hydroxycarbofuran	15	
	Acenaphthene	1	
	Alachlor	17	
	Aldicarb	15	
	Aldicarb sulfone	15	
	Aldicarb sulfoxide	15	
	Aldrin	15	
	Atrazine	17	
	Bentazon, sodium salt	15	
	Benzene (benzol)	24	
	Bromacil	16	
	Butachlor	16	
	Carbaryl	15	
	Carbofuran	15	
	Chlordane	17	
	Chloromethane (methyl chloride)	17	
	Chlorthal-dimethyl acid degradates	15	
	Dalapon	15	
	DBCP	17	
	Diazinon	16	
	Dicamba	15	
	Dieldrin	15	
	Dimethoate	15	
	Dinoseb	15	
	Diquat dibromide	17	
	Diuron	15	
	Endothall	17	
	Endrin	17	
	Ethylene dibromide	17	
	Glyphosate, isopropylamine salt	17	
	Heptachlor	17	
	Heptachlor epoxide	17	
	Hexachlorobenzene	17	
	Lindane (gamma-BHC)	17	
	Methomyl	15	

Alameda	Chemical	Wells Sampled	Wells with Detections
	Methoxychlor	17	
	Methyl bromide (bromomethane)	17	
	Metolachlor	16	
	Metribuzin	15	
	Molinate	16	
	Naphthalene	24	
	Ortho-dichlorobenzene	24	
	Oxamyl	15	
	Picloram	15	
	Prometryn	1	
	Propachlor	16	
	Simazine	17	
	Thiobencarb	16	
	Toxaphene	17	
	Trichlorobenzenes	24	
	Xylene	24	

Amador	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	4	
	1,2,4-Trichlorobenzene	4	
	1,2-D + 1,3-D + C-3 compounds	2	
	1,2-Dichloropropane	4	
	Benzene (benzol)	4	
	Carbon disulfide	2	
	Chloromethane (methyl chloride)	2	
	Ethylene dibromide	1	
	Methyl bromide (bromomethane)	2	
	Ortho-dichlorobenzene	4	
	Trichlorobenzenes	2	
	Xylene	4	

Butte	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	36	
	1,2,4-Trichlorobenzene	36	
	1,2-D + 1,3-D + C-3 compounds	33	
	1,2-Dichloropropane	36	
	Benzene (benzol)	36	
	Chloromethane (methyl chloride)	1	
	DBCP	1	
	Ethylene dibromide	1	
	Methyl bromide (bromomethane)	1	
	Naphthalene	33	
	Ortho-dichlorobenzene	36	
	Trichlorobenzenes	33	
	Xylene	35	

Calaveras	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	1	
	1,2,4-Trichlorobenzene	1	
	1,2-D + 1,3-D + C-3 compounds	1	
	1,2-Dichloropropane	1	
	Benzene (benzol)	1	
	Chloromethane (methyl chloride)	1	
	Methyl bromide (bromomethane)	1	
	Naphthalene	1	
	Ortho-dichlorobenzene	1	
	Trichlorobenzenes	1	
	Xylene	1	

Colusa	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	5	
	1,2,4-Trichlorobenzene	5	
	1,2-D + 1,3-D + C-3 compounds	5	
	1,2-Dichloropropane	5	
	2,4-D	2	
	Alachlor	1	
	Aldicarb	4	
	Aldicarb sulfone	4	
	Aldicarb sulfoxide	4	
	Atrazine	1	
	Benzene (benzol)	5	
	Bromacil	1	
	Butachlor	1	
	Carbofuran	2	
	Chloromethane (methyl chloride)	5	
	Diazinon	1	
	Dimethoate	1	
	Glyphosate, isopropylamine salt	2	
	Methyl bromide (bromomethane)	5	
	Metolachlor	1	
	Metribuzin	1	
	Molinate	1	
	Naphthalene	1	
	Ortho-dichlorobenzene	5	
	Prometryn	1	
	Propachlor	1	
	Simazine	1	
	Thiobencarb	1	
	Trichlorobenzenes	5	
	Xylene	5	

Contra Costa	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	4	
	1,1,2,2-Tetrachloroethane	9	
	1,2,4-Trichlorobenzene	9	
	1,2-D + 1,3-D + C-3 compounds	8	
	1,2-Dichloropropane	9	
	2,4,5-TP (silvex)	4	
	2,4-D	4	
	3-Hydroxycarbofuran	4	
	Alachlor	4	
	Aldicarb	4	
	Aldicarb sulfone	4	
	Aldicarb sulfoxide	4	
	Aldrin	4	
	Atrazine	4	
	Bentazon, sodium salt	4	
	Benzene (benzol)	9	
	Bromacil	4	
	Butachlor	4	
	Carbaryl	4	
	Carbofuran	4	
	Carbon disulfide	4	
	Chlordane	4	
	Chloromethane (methyl chloride)	8	1
	Dalapon	4	
	DBCP	4	1
	Diazinon	4	
	Dieldrin	4	
	Dimethoate	4	
	Dinoseb	4	
	Diquat dibromide	4	
	Diuron	4	
	Endothall	4	
	Endrin	4	
	Ethylene dibromide	4	
	Glyphosate, isopropylamine salt	4	
	Heptachlor	4	
	Heptachlor epoxide	4	
	Hexachlorobenzene	4	
	Lindane (gamma-BHC)	4	
	Methomyl	4	
	Methoxychlor	4	

Contra Costa	Chemical	Wells Sampled	Wells with Detections
	Methyl bromide (bromomethane)	8	
	Metolachlor	4	
	Metribuzin	4	
	Molinate	4	
	Naphthalene	8	
	Ortho-dichlorobenzene	9	
	Oxamyl	4	
	Picloram	4	
	Prometryn	4	
	Propachlor	4	
	Simazine	4	
	Thiobencarb	4	
	Toxaphene	4	
	Trichlorobenzenes	8	
	Xylene	9	

Del Norte	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	5	
	1,2,4-Trichlorobenzene	5	
	1,2-D + 1,3-D + C-3 compounds	5	
	1,2-Dichloropropane	5	
	Benzene (benzol)	5	
	Chloromethane (methyl chloride)	5	
	Methyl bromide (bromomethane)	5	
	Naphthalene	5	
	Ortho-dichlorobenzene	5	
	Trichlorobenzenes	5	
	Xylene	5	

El Dorado	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	19	
	1,2,4-Trichlorobenzene	19	
	1,2-D + 1,3-D + C-3 compounds	19	
	1,2-Dichloropropane	19	
	2,3,7,8-TCDD (dioxin)	5	
	2,4,5-TP (silvex)	16	
	2,4-D	16	
	3-Hydroxycarbofuran	16	
	Alachlor	16	
	Aldicarb	16	
	Aldicarb sulfone	16	
	Aldicarb sulfoxide	16	
	Aldrin	16	
	Atrazine	16	
	Bentazon, sodium salt	16	
	Benzene (benzol)	19	
	Bromacil	16	
	Butachlor	16	
	Carbaryl	16	
	Carbofuran	16	
	Carbon disulfide	1	1
	Chlordane	15	
	Chloromethane (methyl chloride)	19	
	Chlorthal-dimethyl acid degradates	16	
	Dalapon	16	
	DBCP	16	
	Diazinon	16	
	Dicamba	16	
	Dieldrin	15	
	Dimethoate	16	
	Dinoseb	16	
	Diquat dibromide	16	
	Endothall	16	
	Endrin	16	
	Ethylene dibromide	16	
	Glyphosate, isopropylamine salt	16	
	Heptachlor	15	
	Heptachlor epoxide	15	
	Hexachlorobenzene	16	
	Lindane (gamma-BHC)	16	
	Methomyl	16	
	Methoxychlor	16	
	Methyl bromide (bromomethane)	19	
	Metolachlor	16	

El Dorado	Chemical	Wells Sampled	Wells with Detections
	Metribuzin	16	
	Molinate	16	
	Naphthalene	7	
	Ortho-dichlorobenzene	19	
	Oxamyl	16	
	Picloram	16	
	Propachlor	16	
	Simazine	16	
	Thiobencarb	18	
	Toxaphene	15	
	Trichlorobenzenes	19	
	Xylene	19	

Fresno	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	44	
	1,1,2,2-Tetrachloroethane	55	
	1,2,4-Trichlorobenzene	55	
	1,2-D + 1,3-D + C-3 compounds	55	
	1,2-Dichloropropane	55	
	2,4,5-T	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	1	
	ACET (deethyl-simazine or deisopropyl-atrazine)	47	40
	Alachlor	36	
	Aldicarb	8	
	Aldicarb sulfone	8	
	Aldicarb sulfoxide	8	
	Aldrin	1	
	Atrazine	83	2
	Bentazon, sodium salt	1	
	Benzene (benzol)	55	
	Bromacil	78	15
	Butachlor	31	
	Carbaryl	1	
	Carbofuran	1	
	Carbon disulfide	17	
	Chlordane	2	
	Chloromethane (methyl chloride)	52	
	Chlorothalonil	1	
	Dalapon	1	
	DBCP	120	86
	Deethyl-atrazine	47	3
	Desmethylnorflurazon	47	22
	Diaminochlorotriazine (DACT)	47	40
	Diazinon	14	
	Dicamba	1	
	Dieldrin	1	
	Dimethoate	31	
	Dinoseb	1	
	Diuron	47	22
	Endrin	2	
	Ethylene dibromide	112	4
	Heptachlor	2	
	Heptachlor epoxide	2	
	Hexachlorobenzene	2	

Fresno	Chemical	Wells Sampled	Wells with Detections
	Hexazinone	47	
	Lindane (gamma-BHC)	2	
	Methomyl	1	
	Methoxychlor	2	
	Methyl bromide (bromomethane)	52	
	Metolachlor	31	
	Metribuzin	31	
	Molinate	31	
	Naphthalene	55	
	Norflurazon	47	13
	Ortho-dichlorobenzene	55	
	Oxamyl	1	
	Picloram	1	
	Prometon	47	1
	Prometryn	15	
	Propachlor	31	
	Simazine	83	34
	Thiobencarb	31	
	Toxaphene	2	
	Trichlorobenzenes	55	
	Trifluralin	1	
	Xylene	55	1

Glenn	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	5	
	1,2,4-Trichlorobenzene	5	
	1,2-D + 1,3-D + C-3 compounds	5	
	1,2-Dichloropropane	5	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Benzene (benzol)	5	
	Chloromethane (methyl chloride)	4	
	Methyl bromide (bromomethane)	4	
	Naphthalene	5	
	Ortho-dichlorobenzene	5	
	Trichlorobenzenes	5	
	Xylene	5	

Humboldt	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	2	
	1,2,4-Trichlorobenzene	2	
	1,2-D + 1,3-D + C-3 compounds	2	
	1,2-Dichloropropane	2	
	Benzene (benzol)	2	
	Chloromethane (methyl chloride)	2	
	Methyl bromide (bromomethane)	2	
	Naphthalene	2	
	Ortho-dichlorobenzene	2	
	Trichlorobenzenes	2	
	Xylene	2	

Imperial	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	4	
	1,2,4-Trichlorobenzene	4	
	1,2-D + 1,3-D + C-3 compounds	1	
	1,2-Dichloropropane	4	
	Alachlor	1	
	Atrazine	1	
	Benzene (benzol)	4	
	Bromacil	1	
	Butachlor	1	
	Chloromethane (methyl chloride)	1	
	Diazinon	1	
	Dimethoate	1	
	Ethylene dibromide	1	
	Methyl bromide (bromomethane)	1	
	Metolachlor	1	
	Metribuzin	1	
	Molinate	1	
	Naphthalene	1	
	Ortho-dichlorobenzene	4	
	Prometryn	1	
	Simazine	1	
	Thiobencarb	1	
	Trichlorobenzenes	1	
	Xylene	4	

Inyo	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	12	
	1,1,2,2-Tetrachloroethane	15	
	1,2,4-Trichlorobenzene	15	
	1,2-D + 1,3-D + C-3 compounds	15	
	1,2-Dichloropropane	15	
	2,3,7,8-TCDD (dioxin)	2	
	2,4,5-T	2	
	2,4,5-TP (silvex)	2	
	2,4-D	2	
	3-Hydroxycarbofuran	2	
	Alachlor	2	
	Aldicarb	2	
	Aldicarb sulfone	2	
	Aldicarb sulfoxide	2	
	Aldrin	2	
	Atrazine	2	
	Bentazon, sodium salt	2	
	Benzene (benzol)	15	
	Bromacil	2	
	Butachlor	2	
	Carbaryl	2	
	Carbofuran	2	
	Chlordane	2	
	Chloromethane (methyl chloride)	15	1
	Dalapon	2	
	DBCP	6	
	Diazinon	2	
	Dicamba	2	
	Dieldrin	2	
	Dimethoate	2	
	Dinoseb	2	
	Diquat dibromide	2	
	Endothall	2	
	Endrin	2	
	Ethylene dibromide	5	
	Glyphosate, isopropylamine salt	2	
	Heptachlor	2	
	Heptachlor epoxide	2	
	Hexachlorobenzene	2	
	Lindane (gamma-BHC)	2	
	Methomyl	2	
	Methoxychlor	2	

Inyo	Chemical	Wells Sampled	Wells with Detections
	Methyl bromide (bromomethane)	15	
	Metolachlor	2	
	Metribuzin	2	
	Molinate	2	
	Naphthalene	15	
	Ortho-dichlorobenzene	15	
	Oxamyl	2	
	Picloram	2	
	Prometryn	2	
	Propachlor	2	
	Simazine	5	
	Thiobencarb	2	
	Toxaphene	2	
	Trichlorobenzenes	15	
	Xylene	15	

Kern	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	57	
	1,1,2,2-Tetrachloroethane	168	
	1,2,4-Trichlorobenzene	164	
	1,2-D + 1,3-D + C-3 compounds	150	
	1,2-Dichloropropane	168	2
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-T	12	
	2,4,5-TP (silvex)	13	
	2,4-D	13	
	3-Hydroxycarbofuran	12	
	4(2,4-DB), dimethylamine salt	9	
	Acenaphthene	10	
	Acifluorfen, sodium salt	1	
	Alachlor	74	1
	Aldicarb	15	
	Aldicarb sulfone	15	
	Aldicarb sulfoxide	15	
	Aldrin	22	
	Atraton	28	
	Atrazine	91	
	Benefin (benfluralin)	11	
	Bentazon, sodium salt	13	
	Benzene (benzol)	169	1
	BHC (other than gamma isomer)	28	
	Bromacil	62	
	Butachlor	44	
	Carbaryl	12	
	Carbofuran	13	
	Carbon disulfide	1	
	Chlordane	12	
	Chloromethane (methyl chloride)	73	
	Chlorothalonil	2	
	Dalapon	13	
	DBCP	151	25
	DDD	10	
	DDE	10	
	DDT	10	
	DDVP (dichlorvos)	10	
	Diazinon	33	
	Dicamba	12	
	Dichlorprop, butoxyethanol ester	10	
	Dieldrin	12	
	Dimethoate	62	

Kern	Chemical	Wells Sampled	Wells with Detections
	Dinoseb	13	
	Diquat dibromide	12	
	Diuron	2	
	Endosulfan	9	
	Endosulfan sulfate	9	
	Endothall	12	
	Endrin	22	
	Endrin aldehyde	9	
	Ethylene dibromide	137	8
	Glyphosate, isopropylamine salt	12	
	Heptachlor	22	
	Heptachlor epoxide	22	
	Hexachlorobenzene	31	
	Lindane (gamma-BHC)	31	1
	MCPA, dimethylamine salt	9	
	MCPP	9	
	Merphos	10	
	Methiocarb	9	
	Methomyl	12	
	Methoxychlor	31	
	Methyl bromide (bromomethane)	73	
	Metolachlor	62	
	Metribuzin	62	
	Mevinphos (phosdrin)	10	
	Molinate	67	
	Naphthalene	154	
	Ortho-dichlorobenzene	168	
	Oxamyl	13	
	Pendimethalin	1	
	Pentachloronitrobenzene (PCNB)	11	
	Picloram	4	
	Prometon	28	
	Prometryn	38	
	Propachlor	45	
	Propoxur	9	
	Secbumeton	28	
	Simazine	91	
	Terbutryn	28	
	Thiobencarb	72	
	Toxaphene	22	
	Trichlorobenzenes	149	
	Trifluralin	2	
	Xylene	167	

Kings	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	2	
	1,1,2,2-Tetrachloroethane	2	
	1,2,4-Trichlorobenzene	2	
	1,2-D + 1,3-D + C-3 compounds	2	
	1,2-Dichloropropane	2	
	Aldicarb	12	
	Aldicarb sulfone	12	
	Aldicarb sulfoxide	12	
	Benzene (benzol)	4	1
	Chloromethane (methyl chloride)	2	
	DBCP	2	
	Ethylene dibromide	2	
	Methyl bromide (bromomethane)	2	
	Naphthalene	2	
	Ortho-dichlorobenzene	2	
	Trichlorobenzenes	2	
	Xylene	2	

Lake	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	7	
	1,1,2,2-Tetrachloroethane	8	
	1,2,4-Trichlorobenzene	8	
	1,2-D + 1,3-D + C-3 compounds	8	
	1,2-Dichloropropane	8	
	2,4,5-T	7	
	2,4,5-TP (silvex)	7	
	2,4-D	7	
	3-Hydroxycarbofuran	4	
	4(2,4-DB), dimethylamine salt	7	
	Acifluorfen, sodium salt	3	
	Acrylonitrile	7	
	Alachlor	2	
	Aldicarb	4	
	Aldicarb sulfone	4	
	Aldicarb sulfoxide	4	
	Aldrin	1	
	Atrazine	9	
	Bentazon, sodium salt	7	
	Benzene (benzol)	8	
	BHC (other than gamma isomer)	1	
	Bromacil	2	
	Butachlor	2	
	Carbaryl	4	
	Carbofuran	4	
	Carbon disulfide	7	
	Chlordane	1	
	Chlorobenzilate	1	
	Chloromethane (methyl chloride)	8	
	Chloroneb	1	
	Chlorothalonil	1	
	Chlorthal-dimethyl acid degradates	3	
	Dalapon	7	
	DBCP	2	
	DDD	1	
	DDE	1	
	DDT	1	
	Diazinon	2	
	Dicamba	7	
	Dichlorprop, butoxyethanol ester	3	
	Dieldrin	1	
	Dimethoate	2	

Lake	Chemical	Wells Sampled	Wells with Detections
	Dinoseb	7	
	Diquat dibromide	7	
	Endosulfan	1	
	Endosulfan sulfate	1	
	Endothall	5	
	Endrin	1	
	Endrin aldehyde	1	
	Ethylene dibromide	3	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	1	
	Lindane (gamma-BHC)	1	
	Methiocarb	4	
	Methomyl	4	
	Methoxychlor	1	
	Methyl bromide (bromomethane)	8	
	Metolachlor	2	
	Metribuzin	2	
	Molinate	2	
	Naphthalene	8	
	Ortho-dichlorobenzene	8	
	Oxamyl	5	
	Permethrin	1	
	Permethrin, other related	1	
	Picloram	7	
	Prometryn	3	
	Propachlor	3	
	Propoxur	4	
	Simazine	9	
	Thiobencarb	2	
	Toxaphene	1	
	Trichlorobenzenes	8	
	Trifluralin	1	
	Xylene	8	

Lassen	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	4	
	1,2-Dichloropropane	4	

Los Angeles	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	190	
	1,1,2,2-Tetrachloroethane	599	
	1,2,4-Trichlorobenzene	536	
	1,2-D + 1,3-D + C-3 compounds	499	
	1,2-Dichloropropane	599	
	2,3,7,8-TCDD (dioxin)	92	
	2,4,5-T	3	
	2,4,5-TP (silvex)	33	
	2,4-D	33	
	3-Hydroxycarbofuran	25	
	4(2,4-DB), dimethylamine salt	3	
	Acetochlor	14	
	Acifluorfen, sodium salt	2	
	Acrylonitrile	2	
	Alachlor	70	
	Aldicarb	28	
	Aldicarb sulfone	28	
	Aldicarb sulfoxide	28	
	Aldrin	17	
	Atrazine	178	
	Bentazon, sodium salt	33	
	Benzene (benzol)	599	
	BHC (other than gamma isomer)	2	
	Bromacil	45	
	Butachlor	38	
	Carbaryl	28	
	Carbofuran	34	
	Carbon disulfide	107	
	Chlordane	32	
	Chloromethane (methyl chloride)	477	3
	Chlorothalonil	11	
	Chlorthal-dimethyl (dacthal / DCPA)	2	
	Chlorthal-dimethyl acid degradates	20	
	Dalapon	33	
	DBCP	223	9
	DDD	2	
	DDE	2	
	DDT	2	
	Diazinon	32	
	Dicamba	24	
	Dichlorprop, butoxyethanol ester	2	
	Dieldrin	20	

Los Angeles	Chemical	Wells Sampled	Wells with Detections
	Dimethoate	38	
	Dinoseb	33	
	Diquat dibromide	33	
	Diuron	9	
	Endosulfan	2	
	Endosulfan sulfate	2	
	Endothall	36	
	Endrin	32	
	Endrin aldehyde	2	
	Ethylene dibromide	223	1
	Glyphosate, isopropylamine salt	31	
	Heptachlor	32	
	Heptachlor epoxide	32	
	Hexachlorobenzene	49	
	Lindane (gamma-BHC)	24	
	Methiocarb	5	
	Methomyl	25	
	Methoxychlor	32	
	Methyl bromide (bromomethane)	477	1
	Metolachlor	34	
	Metribuzin	38	
	Molinate	89	
	Naphthalene	268	
	Ortho-dichlorobenzene	599	
	Oxamyl	34	
	Paraquat dichloride	15	
	Picloram	33	
	Prometon	6	
	Prometryn	26	
	Propachlor	32	
	Propoxur	5	
	Simazine	178	
	Terbacil	15	
	Thiobencarb	197	
	Toxaphene	32	
	Trichlorobenzenes	499	
	Trifluralin	3	
	Xylene	598	1

Madera	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	5	
	1,1,2,2-Tetrachloroethane	20	
	1,2,4-Trichlorobenzene	20	
	1,2-D + 1,3-D + C-3 compounds	20	
	1,2-Dichloropropane	20	
	Alachlor	21	
	Aldicarb	4	
	Aldicarb sulfone	4	
	Aldicarb sulfoxide	4	
	Atrazine	21	
	Benzene (benzol)	20	
	Bromacil	1	
	Butachlor	1	
	Chlordane	9	
	Chloromethane (methyl chloride)	20	1
	DBCP	20	3
	Diazinon	1	
	Dimethoate	1	
	Endrin	10	
	Ethylene dibromide	20	1
	Heptachlor	9	
	Heptachlor epoxide	9	
	Hexachlorobenzene	9	
	Lindane (gamma-BHC)	9	
	Methoxychlor	9	
	Methyl bromide (bromomethane)	20	
	Metolachlor	1	
	Metribuzin	1	
	Molinate	1	
	Naphthalene	20	
	Ortho-dichlorobenzene	20	
	Prometryn	1	
	Propachlor	1	
	Simazine	21	
	Thiobencarb	1	
	Toxaphene	9	
	Trichlorobenzenes	20	
	Xylene	20	

Marin	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	2	
	1,2,4-Trichlorobenzene	2	
	1,2-D + 1,3-D + C-3 compounds	2	
	1,2-Dichloropropane	2	
	2,4,5-T	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	4(2,4-DB), dimethylamine salt	1	
	Atrazine	1	
	Bentazon, sodium salt	1	
	Benzene (benzol)	2	
	Chloromethane (methyl chloride)	1	
	Dalapon	1	
	Dicamba	1	
	Dinoseb	1	
	Methyl bromide (bromomethane)	1	
	Naphthalene	1	
	Ortho-dichlorobenzene	2	
	Picloram	1	
	Simazine	1	
	Trichlorobenzenes	2	
	Xylene	2	

Mariposa	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	18	
	1,1,2,2-Tetrachloroethane	21	
	1,2,4-Trichlorobenzene	21	
	1,2-D + 1,3-D + C-3 compounds	21	
	1,2-Dichloropropane	21	
	Alachlor	3	
	Atrazine	4	
	Benzene (benzol)	24	
	Bromacil	1	
	Butachlor	1	
	Chlordane	1	
	Chloromethane (methyl chloride)	21	
	DBCP	1	
	Diazinon	1	
	Dimethoate	1	
	Endrin	1	
	Ethylene dibromide	1	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	1	
	Lindane (gamma-BHC)	1	
	Methoxychlor	1	
	Methyl bromide (bromomethane)	21	
	Metolachlor	1	
	Metribuzin	1	
	Molinate	1	
	Naphthalene	19	
	Ortho-dichlorobenzene	21	
	Prometryn	1	
	Simazine	4	
	Thiobencarb	1	
	Toxaphene	1	
	Trichlorobenzenes	21	
	Xylene	24	1

Mendocino	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	6	
	1,1,2,2-Tetrachloroethane	6	
	1,2,4-Trichlorobenzene	6	
	1,2-D + 1,3-D + C-3 compounds	6	
	1,2-Dichloropropane	6	
	2,4,5-T	8	
	2,4,5-TP (silvex)	8	
	2,4-D	8	
	3-Hydroxycarbofuran	7	
	4(2,4-DB), dimethylamine salt	8	
	Acifluorfen, sodium salt	8	
	Acrylonitrile	6	
	Alachlor	15	
	Aldicarb	7	
	Aldicarb sulfone	7	
	Aldicarb sulfoxide	7	
	Aldrin	2	
	Atrazine	15	
	Bentazon, sodium salt	8	
	Benzene (benzol)	6	
	BHC (other than gamma isomer)	2	
	Bromacil	15	
	Butachlor	15	
	Carbaryl	7	
	Carbofuran	7	
	Carbon disulfide	6	
	Chlordane	2	
	Chlorobenzilate	2	
	Chloromethane (methyl chloride)	6	1
	Chloroneb	2	
	Chlorothalonil	2	
	Chlorthal-dimethyl acid degradates	8	
	Dalapon	8	
	DBCP	2	
	DDD	2	
	DDE	2	
	DDT	2	
	Diazinon	3	
	Dicamba	8	
	Dichlorprop, butoxyethanol ester	8	
	Dieldrin	2	

Mendocino	Chemical	Wells Sampled	Wells with Detections
	Dimethoate	15	
	Dinoseb	8	
	Diquat dibromide	7	
	Endosulfan	2	
	Endosulfan sulfate	2	
	Endothall	6	
	Endrin	2	
	Endrin aldehyde	2	
	Ethylene dibromide	2	
	Heptachlor	2	
	Heptachlor epoxide	2	
	Hexachlorobenzene	2	
	Lindane (gamma-BHC)	2	
	Methiocarb	7	
	Methomyl	7	
	Methoxychlor	2	
	Methyl bromide (bromomethane)	6	1
	Metolachlor	15	
	Metribuzin	15	
	Molinate	15	
	Naphthalene	6	
	Ortho-dichlorobenzene	6	
	Oxamyl	7	
	Permethrin	2	
	Permethrin, other related	2	
	Picloram	8	
	Prometryn	15	
	Propachlor	15	
	Propoxur	7	
	Simazine	15	
	Thiobencarb	15	
	Toxaphene	2	
	Trichlorobenzenes	6	
	Trifluralin	2	
	Xylene	6	

Merced	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	18	
	1,1,2,2-Tetrachloroethane	19	
	1,2,4-Trichlorobenzene	19	
	1,2-D + 1,3-D + C-3 compounds	19	
	1,2-Dichloropropane	19	
	Alachlor	22	
	Aldicarb	13	
	Aldicarb sulfone	13	
	Aldicarb sulfoxide	13	
	Aldrin	1	
	Atrazine	22	
	Benzene (benzol)	19	
	Bromacil	13	
	Butachlor	13	
	Chlordane	2	
	Chloromethane (methyl chloride)	19	
	Chlorothalonil	1	
	DBCP	20	12
	Diazinon	4	
	Dieldrin	1	
	Dimethoate	13	
	Endrin	2	
	Ethylene dibromide	16	
	Heptachlor	2	
	Heptachlor epoxide	2	
	Hexachlorobenzene	2	
	Lindane (gamma-BHC)	2	
	Methoxychlor	2	
	Methyl bromide (bromomethane)	19	
	Metolachlor	13	
	Metribuzin	13	
	Molinate	13	
	Naphthalene	19	
	Ortho-dichlorobenzene	19	
	Prometryn	11	
	Propachlor	13	
	Simazine	22	
	Thiobencarb	13	
	Toxaphene	2	
	Trichlorobenzenes	19	
	Trifluralin	1	
	Xylene	19	

Modoc	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	1	
	1,2,4-Trichlorobenzene	1	
	1,2-D + 1,3-D + C-3 compounds	1	
	1,2-Dichloropropane	1	
	Benzene (benzol)	1	
	Chloromethane (methyl chloride)	1	
	DBCP	1	
	Methyl bromide (bromomethane)	1	
	Naphthalene	1	
	Ortho-dichlorobenzene	1	
	Trichlorobenzenes	1	
	Xylene	1	

Mono	Chemical	Wells Sampled	Wells with Detections
	2,3,7,8-TCDD (dioxin)	2	
	2,4,5-TP (silvex)	2	
	2,4-D	2	
	3-Hydroxycarbofuran	2	
	Alachlor	2	
	Aldicarb	2	
	Aldicarb sulfone	2	
	Aldicarb sulfoxide	2	
	Aldrin	2	
	Atrazine	2	
	Bentazon, sodium salt	2	
	Bromacil	2	
	Butachlor	2	
	Carbaryl	2	
	Carbofuran	2	
	Chlordane	2	
	Chlorothalonil	2	
	Dalapon	2	
	DBCP	2	
	Diazinon	2	
	Dicamba	2	
	Dieldrin	2	
	Dimethoate	2	
	Dinoseb	2	
	Diquat dibromide	2	
	Diuron	2	
	Endothall	2	
	Endrin	2	
	Ethylene dibromide	2	
	Glyphosate, isopropylamine salt	2	
	Heptachlor	2	
	Heptachlor epoxide	2	
	Hexachlorobenzene	2	
	Lindane (gamma-BHC)	2	
	Methiocarb	2	
	Methomyl	2	
	Methoxychlor	2	
	Metolachlor	2	
	Metribuzin	2	
	Molinate	2	
	Oxamyl	2	
	Picloram	2	

Mono	Chemical	Wells Sampled	Wells with Detections
	Prometryn	2	
	Propachlor	2	
	Propoxur	2	
	Simazine	2	
	Thiobencarb	2	
	Toxaphene	2	

Monterey	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	25	
	1,1,2,2-Tetrachloroethane	55	
	1,2,4-Trichlorobenzene	55	
	1,2-D + 1,3-D + C-3 compounds	52	
	1,2-Dichloropropane	55	
	2,3,7,8-TCDD (dioxin)	3	
	2,4,5-T	35	
	2,4,5-TP (silvex)	35	
	2,4-D	37	
	3-Hydroxycarbofuran	25	
	4(2,4-DB), dimethylamine salt	1	
	Acifluorfen, sodium salt	1	
	Alachlor	38	
	Aldicarb	25	
	Aldicarb sulfone	25	
	Aldicarb sulfoxide	25	
	Aldrin	8	
	Atrazine	38	
	Bentazon, sodium salt	37	
	Benzene (benzol)	55	
	Bromacil	34	
	Butachlor	35	
	Carbaryl	25	
	Carbofuran	27	
	Carbon disulfide	3	
	Chlordane	8	
	Chloromethane (methyl chloride)	31	1
	Chlorothalonil	7	
	Chlorthal-dimethyl acid degradates	1	
	Dalapon	35	
	DBCP	9	
	DDT	1	
	Diazinon	23	
	Dicamba	35	
	Dichlorprop, butoxyethanol ester	1	
	Dieldrin	8	
	Dimethoate	34	
	Dinoseb	35	
	Diquat dibromide	37	
	Diuron	1	
	Endothall	9	
	Endrin	8	

Monterey	Chemical	Wells Sampled	Wells with Detections
	Ethylene dibromide	9	
	Glyphosate, isopropylamine salt	6	
	Heptachlor	8	
	Heptachlor epoxide	8	
	Hexachlorobenzene	8	
	Lindane (gamma-BHC)	10	
	Methiocarb	1	
	Methomyl	25	
	Methoxychlor	8	
	Methyl bromide (bromomethane)	29	
	Metolachlor	35	
	Metribuzin	35	
	Molinate	35	
	Naphthalene	50	1
	Ortho-dichlorobenzene	55	
	Oxamyl	27	
	Picloram	35	
	Prometryn	17	
	Propachlor	35	
	Simazine	38	
	Thiobencarb	35	
	Toxaphene	8	
	Trichlorobenzenes	52	
	Trifluralin	7	
	Xylene	55	1

Napa	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	4	
	1,2,4-Trichlorobenzene	3	
	1,2-D + 1,3-D + C-3 compounds	4	
	1,2-Dichloropropane	4	
	2,4,5-T	2	
	2,4,5-TP (silvex)	3	
	2,4-D	3	
	3-Hydroxycarbofuran	3	
	4(2,4-DB), dimethylamine salt	2	
	Alachlor	1	
	Aldicarb	3	
	Aldicarb sulfone	3	
	Aldicarb sulfoxide	3	
	Aldrin	1	
	Atrazine	3	
	Bentazon, sodium salt	3	
	Benzene (benzol)	4	
	Bromacil	1	
	Butachlor	1	
	Carbaryl	3	
	Carbofuran	3	
	Chlordane	1	
	Chloromethane (methyl chloride)	4	
	Chlorthal-dimethyl acid degradates	1	
	Dalapon	3	
	DBCP	2	
	Diazinon	1	
	Dicamba	3	
	Dieldrin	1	
	Dimethoate	1	
	Dinoseb	3	
	Diquat dibromide	3	
	Endothall	4	
	Endrin	1	
	Ethylene dibromide	3	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	1	
	Lindane (gamma-BHC)	1	
	Methiocarb	2	
	Methomyl	3	
	Methoxychlor	1	
	Methyl bromide (bromomethane)	4	
	Metolachlor	1	
	Metribuzin	1	

Napa	Chemical	Wells Sampled	Wells with Detections
	Molinate	1	
	Naphthalene	2	
	Ortho-dichlorobenzene	4	
	Oxamyl	3	
	Picloram	3	
	Prometryn	1	
	Propachlor	1	
	Propoxur	2	
	Simazine	3	
	Thiobencarb	1	
	Toxaphene	1	
	Trichlorobenzenes	4	
	Xylene	4	

Nevada	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	1	
	1,2,4-Trichlorobenzene	1	
	1,2-D + 1,3-D + C-3 compounds	1	
	1,2-Dichloropropane	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	1	
	Alachlor	1	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Aldrin	1	
	Atrazine	1	
	Bentazon, sodium salt	1	
	Benzene (benzol)	1	
	Carbaryl	1	
	Carbofuran	1	
	Chlordane	1	
	Chloromethane (methyl chloride)	1	
	Chlorthal-dimethyl acid degradates	1	
	Dalapon	1	
	DBCP	1	
	Dicamba	1	
	Dieldrin	1	
	Dinoseb	1	
	Diquat dibromide	1	
	Endothall	1	
	Endrin	1	
	Ethylene dibromide	1	
	Glyphosate, isopropylamine salt	1	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	1	
	Lindane (gamma-BHC)	1	
	Methomyl	1	
	Methoxychlor	1	
	Methyl bromide (bromomethane)	1	
	Molinate	1	
	Naphthalene	1	
	Ortho-dichlorobenzene	1	
	Oxamyl	1	
	Picloram	1	

Nevada	Chemical	Wells Sampled	Wells with Detections
	Simazine	1	
	Thiobencarb	1	
	Toxaphene	1	
	Trichlorobenzenes	1	
	Xylene	1	

Orange	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	209	
	1,1,2,2-Tetrachloroethane	219	
	1,2,4-Trichlorobenzene	218	
	1,2-D + 1,3-D + C-3 compounds	211	
	1,2-Dichloropropane	219	
	2,3,7,8-TCDD (dioxin)	2	
	2,4,5-TP (silvex)	26	
	2,4,6-trichlorophenol	23	
	2,4-D	26	
	2,4-Dinitrophenol	23	
	3-Hydroxycarbofuran	25	
	Acenaphthene	23	
	Acetochlor	23	
	Alachlor	58	
	Aldicarb	25	
	Aldicarb sulfone	25	
	Aldicarb sulfoxide	25	
	Aldrin	26	
	Atrazine	57	
	Bentazon, sodium salt	26	
	Benzene (benzol)	219	
	BHC (other than gamma isomer)	24	
	Bromacil	54	
	Butachlor	55	
	Carbaryl	25	
	Carbofuran	26	
	Carbon disulfide	1	
	Chlordane	27	
	Chloromethane (methyl chloride)	211	
	Chlorothalonil	24	
	Chlorthal-dimethyl acid degradates	2	
	Dalapon	26	
	DBCP	210	
	DDD	24	
	DDE	24	
	DDT	24	
	Diazinon	54	
	Dicamba	25	
	Dieldrin	26	
	Dimethoate	54	
	Dinoseb	26	
	Diquat dibromide	27	

Orange	Chemical	Wells Sampled	Wells with Detections
	Disulfoton	23	
	Diuron	23	
	Endosulfan	24	
	Endosulfan sulfate	24	
	Endothall	25	
	Endrin	27	
	Endrin aldehyde	24	
	Ethylene dibromide	210	
	Fonofos (dyfonate)	23	
	Glyphosate, isopropylamine salt	26	
	Heptachlor	27	
	Heptachlor epoxide	27	
	Hexachlorobenzene	27	
	Lindane (gamma-BHC)	25	
	Linuron	23	
	Malathion	53	
	Methiocarb	23	
	Methomyl	25	
	Methoxychlor	27	
	Methyl bromide (bromomethane)	211	
	Methyl parathion	53	
	Metolachlor	55	
	Metribuzin	55	
	Molinate	57	
	Naphthalene	210	
	Ortho-dichlorobenzene	219	
	Oxamyl	26	
	Paraquat dichloride	26	
	Parathion or ethyl parathion	53	
	Picloram	26	
	Prometon	53	
	Prometryn	54	
	Propachlor	57	
	Propoxur	23	
	Simazine	57	
	Thiobencarb	57	
	Toxaphene	27	
	Trichlorobenzenes	211	
	Xylene	219	

Placer	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	1	
	1,1,2,2-Tetrachloroethane	8	
	1,2,4-Trichlorobenzene	8	
	1,2-D + 1,3-D + C-3 compounds	8	1
	1,2-Dichloropropane	8	1
	2,4,5-T	5	
	2,4,5-TP (silvex)	5	
	2,4-D	5	
	3-Hydroxycarbofuran	5	
	Alachlor	6	
	Aldicarb	5	
	Aldicarb sulfone	5	
	Aldicarb sulfoxide	5	
	Aldrin	5	
	Atrazine	6	
	Bentazon, sodium salt	5	
	Benzene (benzol)	8	
	Bromacil	6	
	Butachlor	6	
	Carbaryl	5	
	Carbofuran	5	
	Carbon disulfide	5	
	Chlordane	5	
	Chloromethane (methyl chloride)	8	1
	Chlorothalonil	5	
	Dalapon	5	
	DBCP	5	
	Diazinon	6	
	Dicamba	5	
	Dieldrin	5	
	Dimethoate	6	
	Dinoseb	5	
	Diquat dibromide	5	
	Diuron	2	
	Endothall	5	
	Endrin	5	
	Ethylene dibromide	5	
	Glyphosate, isopropylamine salt	5	
	Heptachlor	5	
	Heptachlor epoxide	5	
	Hexachlorobenzene	5	
	Lindane (gamma-BHC)	5	

Placer	Chemical	Wells Sampled	Wells with Detections
	Methomyl	5	
	Methoxychlor	5	
	Methyl bromide (bromomethane)	8	
	Metolachlor	6	
	Metribuzin	6	
	Molinate	6	
	Naphthalene	7	
	Ortho-dichlorobenzene	8	
	Oxamyl	5	
	Picloram	5	
	Prometryn	4	
	Propachlor	6	
	Simazine	6	
	Thiobencarb	6	
	Toxaphene	5	
	Trichlorobenzenes	8	
	Trifluralin	5	
	Xylene	8	

Plumas	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	1	
	1,2,4-Trichlorobenzene	1	
	1,2-D + 1,3-D + C-3 compounds	1	
	1,2-Dichloropropane	1	
	Benzene (benzol)	1	
	Chloromethane (methyl chloride)	1	
	Methyl bromide (bromomethane)	1	
	Naphthalene	1	
	Ortho-dichlorobenzene	1	
	Trichlorobenzenes	1	
	Xylene	1	

Riverside	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	63	
	1,1,2,2-Tetrachloroethane	127	
	1,2,4-Trichlorobenzene	127	
	1,2-D + 1,3-D + C-3 compounds	110	
	1,2-Dichloropropane	127	1
	2,3,7,8-TCDD (dioxin)	52	1
	2,4,5-TP (silvex)	69	
	2,4-D	69	
	3-Hydroxycarbofuran	58	
	Acenaphthene	1	
	Alachlor	78	1
	Aldicarb	58	
	Aldicarb sulfone	58	
	Aldicarb sulfoxide	58	
	Aldrin	57	
	Atrazine	94	1
	Bentazon, sodium salt	69	
	Benzene (benzol)	127	1
	Bromacil	26	
	Butachlor	58	1
	Carbaryl	58	
	Carbofuran	62	
	Carbon disulfide	9	
	Chlordane	70	
	Chloromethane (methyl chloride)	110	
	Chlorothalonil	20	
	Chlorthal-dimethyl acid degradates	14	
	Dalapon	69	
	DBCP	103	1
	Diazinon	58	1
	Dicamba	65	
	Dieldrin	57	
	Dimethoate	26	
	Dinoseb	69	
	Diquat dibromide	62	
	Diuron	27	
	Endothall	66	
	Endrin	70	
	Ethylene dibromide	103	
	Glyphosate, isopropylamine salt	60	
	Heptachlor	70	

Riverside	Chemical	Wells Sampled	Wells with Detections
	Heptachlor epoxide	70	
	Hexachlorobenzene	70	
	Lindane (gamma-BHC)	70	
	Methiocarb	45	
	Methomyl	58	
	Methoxychlor	70	
	Methyl bromide (bromomethane)	110	
	Metolachlor	58	1
	Metribuzin	58	1
	Molinate	78	1
	Naphthalene	110	
	Ortho-dichlorobenzene	127	
	Oxamyl	62	
	Paraquat dichloride	13	
	Picloram	69	
	Prometryn	58	1
	Propachlor	56	
	Propoxur	45	
	Simazine	94	1
	Thiobencarb	78	1
	Toxaphene	70	
	Trichlorobenzenes	110	
	Xylene	127	

Sacramento	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	102	
	1,1,2,2-Tetrachloroethane	144	
	1,2,4-Trichlorobenzene	144	
	1,2-D + 1,3-D + C-3 compounds	136	
	1,2-Dichloropropane	144	
	2,3,7,8-TCDD (dioxin)	4	
	2,4,5-T	84	
	2,4,5-TP (silvex)	85	
	2,4-D	85	1
	3-Hydroxycarbofuran	85	
	4(2,4-DB), dimethylamine salt	81	
	Acifluorfen, sodium salt	81	
	Alachlor	96	
	Aldicarb	85	
	Aldicarb sulfone	85	
	Aldicarb sulfoxide	85	
	Aldrin	93	
	Atrazine	101	
	Bentazon, sodium salt	85	
	Benzene (benzol)	144	
	Bromacil	19	
	Butachlor	96	
	Carbaryl	85	
	Carbofuran	85	
	Chlordane	93	
	Chloromethane (methyl chloride)	136	3
	Chlorothalonil	3	
	Chlorthal-dimethyl acid degradates	82	1
	Dalapon	85	
	DBCP	85	1
	DDT	81	
	Diazinon	8	
	Dicamba	85	
	Dichlorprop, butoxyethanol ester	81	
	Dieldrin	93	
	Dimethoate	19	
	Dinoseb	85	
	Diquat dibromide	85	
	Diuron	3	
	Endothall	85	
	Endrin	93	
	Ethylene dibromide	85	1

Sacramento	Chemical	Wells Sampled	Wells with Detections
	Glyphosate, isopropylamine salt	85	
	Heptachlor	93	
	Heptachlor epoxide	93	
	Hexachlorobenzene	86	
	Lindane (gamma-BHC)	93	
	Methiocarb	81	
	Methomyl	85	
	Methoxychlor	93	
	Methyl bromide (bromomethane)	135	
	Metolachlor	96	
	Metribuzin	96	
	Molinate	101	
	Naphthalene	136	
	Ortho-dichlorobenzene	144	
	Oxamyl	85	
	Picloram	85	
	Prometryn	17	
	Propachlor	96	
	Simazine	101	
	Thiobencarb	135	
	Toxaphene	93	
	Trichlorobenzenes	136	
	Trifluralin	3	
	Xylene	144	

San Benito	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	2	
	1,1,2,2-Tetrachloroethane	5	
	1,2,4-Trichlorobenzene	5	
	1,2-D + 1,3-D + C-3 compounds	5	
	1,2-Dichloropropane	5	
	2,4,5-T	6	
	2,4,5-TP (silvex)	6	
	2,4-D	6	
	3-Hydroxycarbofuran	4	
	Alachlor	6	
	Aldicarb	4	
	Aldicarb sulfone	4	
	Aldicarb sulfoxide	4	
	Aldrin	1	
	Atrazine	6	
	Bentazon, sodium salt	6	
	Benzene (benzol)	5	
	Bromacil	6	
	Butachlor	6	
	Carbaryl	4	
	Carbofuran	4	
	Carbon disulfide	1	
	Chlordane	1	
	Chloromethane (methyl chloride)	5	
	Chlorothalonil	1	
	Dalapon	6	
	Diazinon	3	
	Dicamba	6	
	Dieldrin	1	
	Dimethoate	6	
	Dinoseb	6	
	Diquat dibromide	6	
	Endrin	1	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	1	
	Lindane (gamma-BHC)	1	
	Methomyl	4	
	Methoxychlor	1	
	Methyl bromide (bromomethane)	5	
	Metolachlor	6	
	Metribuzin	6	
	Molinate	6	
	Naphthalene	5	
	Ortho-dichlorobenzene	5	
	Oxamyl	4	

San Benito	Chemical	Wells Sampled	Wells with Detections
	Picloram	6	
	Prometryn	2	
	Propachlor	6	
	Simazine	6	
	Thiobencarb	6	
	Toxaphene	1	
	Trichlorobenzenes	5	
	Trifluralin	1	
	Xylene	5	

San Bernardino	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	33	
	1,1,2,2-Tetrachloroethane	204	
	1,2,4-Trichlorobenzene	204	
	1,2-D + 1,3-D + C-3 compounds	162	
	1,2-Dichloropropane	204	
	2,3,7,8-TCDD (dioxin)	71	
	2,4,5-T	1	
	2,4,5-TP (silvex)	66	
	2,4-D	66	
	3-Hydroxycarbofuran	53	
	4(2,4-DB), dimethylamine salt	3	
	Acetochlor	14	
	Acifluorfen, sodium salt	3	
	Alachlor	73	
	Aldicarb	52	
	Aldicarb sulfone	52	
	Aldicarb sulfoxide	53	
	Aldrin	69	
	Ametryne	1	
	Atrazine	85	
	Bentazon, sodium salt	66	
	Benzene (benzol)	204	
	BHC (other than gamma isomer)	3	
	Bromacil	25	
	Butachlor	47	
	Butylate	1	
	Carbaryl	53	
	Carbofuran	68	
	Carbon disulfide	1	
	Chlordane	69	
	Chloromethane (methyl chloride)	162	1
	Chloroneb	1	
	Chlorothalonil	21	
	Chlorpropham	1	
	Chlorpyrifos	1	
	Chlorthal-dimethyl (dacthal / DCPA)	3	
	Chlorthal-dimethyl acid degradates	30	1
	Cycloate	1	
	Dalapon	66	
	DBCP	186	1
	DDD	3	

San Bernardino	Chemical	Wells Sampled	Wells with Detections
	DDE	3	
	DDT	3	
	Diazinon	45	
	Dicamba	50	
	Dichlorprop, butoxyethanol ester	3	
	Dieldrin	68	
	Dimethoate	22	
	Dinoseb	64	
	Diphenamid	1	
	Diquat dibromide	68	
	Diuron	14	
	Endosulfan	3	
	Endosulfan sulfate	3	
	Endothall	67	
	Endrin	69	
	Endrin aldehyde	3	
	Ethylene dibromide	169	
	Glyphosate, isopropylamine salt	68	
	Heptachlor	69	
	Heptachlor epoxide	69	
	Hexachlorobenzene	82	
	Lindane (gamma-BHC)	66	
	Methiocarb	19	
	Methomyl	53	
	Methoxychlor	69	
	Methyl bromide (bromomethane)	162	
	Metolachlor	47	
	Metribuzin	47	
	Molinate	85	
	Naphthalene	155	
	Napropamide	1	
	Ortho-dichlorobenzene	204	
	Oxamyl	68	
	Paraquat dichloride	7	
	Permethrin	1	
	Picloram	64	
	Prometon	3	
	Prometryn	36	
	Propachlor	60	
	Propazine	1	
	Propoxur	19	
	Simazine	100	

San Bernardino	Chemical	Wells Sampled	Wells with Detections
	Simetryn	1	
	Terbacil	14	
	Terbutryn	1	
	Thiobencarb	85	
	Toxaphene	67	
	Triadimefon	1	
	Trichlorobenzenes	162	
	Trifluralin	5	
	Vernolate	1	
	Xylene	204	1

San Diego	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	18	
	1,1,2,2-Tetrachloroethane	44	
	1,2,4-Trichlorobenzene	44	
	1,2-D + 1,3-D + C-3 compounds	41	
	1,2-Dichloropropane	44	
	2,3,7,8-TCDD (dioxin)	15	
	2,4,5-T	1	
	2,4,5-TP (silvex)	9	
	2,4-D	9	
	3-Hydroxycarbofuran	5	
	4(2,4-DB), dimethylamine salt	1	
	Acenaphthene	1	
	Acetochlor	1	
	Acifluorfen, sodium salt	1	
	Alachlor	18	
	Aldicarb	5	
	Aldicarb sulfone	5	
	Aldicarb sulfoxide	5	
	Aldrin	9	
	Atrazine	19	
	Bentazon, sodium salt	9	
	Benzene (benzol)	44	
	Bromacil	16	
	Butachlor	16	
	Carbaryl	5	
	Carbofuran	6	
	Chlordane	8	
	Chloromethane (methyl chloride)	41	
	Chlorothalonil	4	
	Chlorthal-dimethyl (dacthal / DCPA / dimethyl	3	
	Chlorthal-dimethyl acid degradates	3	
	Dalapon	9	
	DBCP	19	
	DDE	1	
	DDT	1	
	Diazinon	16	
	Dicamba	8	
	Dichlorprop, butoxyethanol ester	1	
	Dieldrin	9	
	Dimethoate	15	
	Dinoseb	9	
	Diquat dibromide	5	

San Diego	Chemical	Wells Sampled	Wells with Detections
	Diuron	1	
	Endothall	6	
	Endrin	8	
	EPTC	1	
	Ethylene dibromide	19	
	Glyphosate, isopropylamine salt	6	
	Heptachlor	8	
	Heptachlor epoxide	8	
	Hexachlorobenzene	8	
	Lindane (gamma-BHC)	8	
	Methiocarb	2	
	Methomyl	6	
	Methoxychlor	8	
	Methyl bromide (bromomethane)	41	
	Metolachlor	16	
	Metribuzin	16	
	Molinate	19	
	Naphthalene	39	
	Ortho-dichlorobenzene	44	
	Oxamyl	6	
	Picloram	9	
	Prometryn	16	
	Propachlor	9	
	Propazine	1	
	Propoxur	1	
	Simazine	19	
	Terbacil	1	
	Thiobencarb	19	
	Toxaphene	8	
	Trichlorobenzenes	41	
	Trifluralin	1	
	Xylene	44	

San Joaquin	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	18	
	1,1,2,2-Tetrachloroethane	66	
	1,2,4-Trichlorobenzene	66	
	1,2-D + 1,3-D + C-3 compounds	66	
	1,2-Dichloropropane	66	
	2,4,5-T	5	
	2,4,5-TP (silvex)	7	
	2,4-D	7	
	3-Hydroxycarbofuran	10	
	Alachlor	11	
	Aldicarb	10	
	Aldicarb sulfone	10	
	Aldicarb sulfoxide	10	
	Aldrin	5	
	Atrazine	10	
	Bentazon, sodium salt	7	
	Benzene (benzol)	66	
	Bromacil	11	
	Butachlor	11	
	Carbaryl	10	
	Carbofuran	10	
	Carbon disulfide	2	
	Chlordane	5	
	Chloromethane (methyl chloride)	42	
	Chlorothalonil	4	
	Chlorthal-dimethyl (dacthal / DCPA)	3	
	Chlorthal-dimethyl acid degradates	5	
	Dalapon	7	
	DBCP	51	1
	Diazinon	11	
	Dicamba	7	
	Dichlorprop, butoxyethanol ester	2	
	Dieldrin	5	
	Dimethoate	11	
	Dinoseb	7	
	Diquat dibromide	10	
	Endothall	10	
	Endrin	5	
	EPTC	2	
	Ethylene dibromide	51	1
	Glyphosate, isopropylamine salt	2	
	Heptachlor	5	
	Heptachlor epoxide	5	
	Hexachlorobenzene	5	
	Lindane (gamma-BHC)	5	

San Joaquin	Chemical	Wells Sampled	Wells with Detections
	Methiocarb	8	
	Methomyl	11	
	Methoxychlor	5	
	Methyl bromide (bromomethane)	42	
	Metolachlor	11	
	Metribuzin	11	
	Molinate	10	
	Naphthalene	54	
	Ortho-dichlorobenzene	66	
	Oxamyl	10	
	Picloram	7	
	Prometryn	9	
	Propachlor	11	
	Propoxur	8	
	Simazine	11	
	Terbacil	3	
	Thiobencarb	11	
	Toxaphene	5	
	Trichlorobenzenes	66	
	Trifluralin	3	
	Xylene	66	

San Luis Obispo	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	22	
	1,2,4-Trichlorobenzene	23	
	1,2-D + 1,3-D + C-3 compounds	9	
	1,2-Dichloropropane	22	
	2,4,5-T	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	1	
	4(2,4-DB), dimethylamine salt	1	
	Alachlor	14	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Atrazine	21	
	Bentazon, sodium salt	1	
	Benzene (benzol)	22	
	Bromacil	14	
	Butachlor	14	
	Carbaryl	1	
	Carbofuran	1	
	Chloromethane (methyl chloride)	9	
	Dalapon	1	
	DBCP	15	
	Diazinon	2	
	Dicamba	1	
	Dimethoate	14	
	Dinoseb	1	
	Diquat dibromide	1	
	Endothall	1	
	Ethylene dibromide	15	
	Glyphosate, isopropylamine salt	1	
	Hexachlorobenzene	3	
	Methiocarb	1	
	Methomyl	1	
	Methyl bromide (bromomethane)	9	
	Metolachlor	14	
	Metribuzin	14	
	Molinate	17	
	Naphthalene	7	
	Ortho-dichlorobenzene	22	
	Oxamyl	1	
	Picloram	1	

San Luis Obispo	Chemical	Wells Sampled	Wells with Detections
	Prometryn	11	
	Propachlor	14	
	Propoxur	1	
	Simazine	21	
	Thiobencarb	17	
	Trichlorobenzenes	9	
	Xylene	22	1

San Mateo	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	7	
	1,1,2,2-Tetrachloroethane	13	
	1,2,4-Trichlorobenzene	13	
	1,2-D + 1,3-D + C-3 compounds	13	
	1,2-Dichloropropane	13	1
	2,3,7,8-TCDD (dioxin)	2	
	2,4,5-T	4	
	2,4,5-TP (silvex)	5	
	2,4-D	5	
	3-Hydroxycarbofuran	5	
	4(2,4-DB), dimethylamine salt	1	
	Acifluorfen, sodium salt	1	
	Acrylonitrile	4	
	Alachlor	5	
	Aldicarb	5	
	Aldicarb sulfone	5	
	Aldicarb sulfoxide	5	
	Aldrin	5	
	Atrazine	5	
	Bentazon, sodium salt	5	
	Benzene (benzol)	13	
	Bromacil	3	
	Butachlor	4	
	Carbaryl	5	
	Carbofuran	5	
	Carbon disulfide	4	
	Chlordane	5	
	Chloromethane (methyl chloride)	7	
	Chlorothalonil	3	
	Chlorthal-dimethyl acid degradates	2	
	Dalapon	5	
	DBCP	5	
	DDT	1	
	Diazinon	1	
	Dicamba	5	
	Dichlorprop, butoxyethanol ester	1	
	Dieldrin	5	
	Dimethoate	3	
	Dinoseb	5	
	Diquat dibromide	5	
	Diuron	1	
	Endothall	5	

San Mateo	Chemical	Wells Sampled	Wells with Detections
	Endrin	5	
	Ethylene dibromide	5	
	Glyphosate, isopropylamine salt	5	
	Heptachlor	5	
	Heptachlor epoxide	5	
	Hexachlorobenzene	5	
	Lindane (gamma-BHC)	5	
	Methiocarb	1	
	Methomyl	5	
	Methoxychlor	5	
	Methyl bromide (bromomethane)	7	
	Metolachlor	4	
	Metribuzin	4	
	Molinate	5	
	Naphthalene	13	
	Ortho-dichlorobenzene	13	
	Oxamyl	5	
	Picloram	5	
	Prometryn	3	
	Propachlor	4	
	Simazine	5	
	Thiobencarb	5	
	Toxaphene	5	
	Trichlorobenzenes	13	
	Trifluralin	3	
	Xylene	13	

Santa Barbara	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	4	
	1,1,2,2-Tetrachloroethane	23	
	1,2,4-Trichlorobenzene	23	
	1,2-D + 1,3-D + C-3 compounds	9	
	1,2-Dichloropropane	23	
	2,3,7,8-TCDD (dioxin)	4	
	2,4,5-TP (silvex)	4	
	2,4-D	4	
	3-Hydroxycarbofuran	4	
	Acetochlor	3	
	Alachlor	6	
	Aldicarb	4	
	Aldicarb sulfone	4	
	Aldicarb sulfoxide	4	
	Aldrin	4	
	Atrazine	20	
	Bentazon, sodium salt	4	
	Benzene (benzol)	23	
	Bromacil	4	
	Butachlor	5	
	Carbaryl	4	
	Carbofuran	4	
	Chlordane	2	
	Chloromethane (methyl chloride)	9	
	Chlorthal-dimethyl acid degradates	4	
	Dalapon	4	
	DBCP	18	
	Diazinon	4	
	Dicamba	4	
	Dieldrin	2	
	Dimethoate	4	
	Dinoseb	4	
	Diquat dibromide	4	
	Endothall	4	
	Endrin	4	
	Ethylene dibromide	18	
	Glyphosate, isopropylamine salt	4	
	Heptachlor	2	
	Heptachlor epoxide	2	
	Hexachlorobenzene	4	
	Lindane (gamma-BHC)	4	
	Methomyl	4	

Santa Barbara	Chemical	Wells Sampled	Wells with Detections
	Methoxychlor	4	
	Methyl bromide (bromomethane)	9	
	Metolachlor	5	
	Metribuzin	5	
	Molinate	6	
	Naphthalene	8	
	Ortho-dichlorobenzene	23	
	Oxamyl	4	
	Picloram	4	
	Prometryn	2	
	Propachlor	4	
	Simazine	20	
	Terbacil	3	
	Thiobencarb	6	
	Toxaphene	2	
	Trichlorobenzenes	9	
	Xylene	23	

Santa Clara	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	18	
	1,1,2,2-Tetrachloroethane	129	
	1,2,4-Trichlorobenzene	129	
	1,2-D + 1,3-D + C-3 compounds	126	
	1,2-Dichloropropane	129	
	2,3,7,8-TCDD (dioxin)	30	
	2,4,5-T	12	
	2,4,5-TP (silvex)	43	
	2,4-D	46	
	3-Hydroxycarbofuran	44	
	Acifluorfen, sodium salt	1	
	Acrylonitrile	1	
	Alachlor	44	
	Aldicarb	44	
	Aldicarb sulfone	44	
	Aldicarb sulfoxide	44	
	Aldrin	31	
	Atrazine	46	
	Bentazon, sodium salt	44	
	Benzene (benzol)	129	
	BHC (other than gamma isomer)	1	
	Bromacil	40	
	Butachlor	40	
	Carbaryl	44	
	Carbofuran	44	
	Carbon disulfide	1	
	Chlordane	35	
	Chlorobenzilate	1	
	Chloromethane (methyl chloride)	61	
	Chloroneb	1	
	Chlorothalonil	6	
	Chlorthal-dimethyl (dacthal / DCPA / dimethyl	2	
	Chlorthal-dimethyl acid degradates	30	
	Dalapon	44	
	DBCP	44	
	DDD	1	
	DDE	1	
	DDT	1	
	Diazinon	38	
	Dicamba	44	
	Dieldrin	31	
	Dimethoate	40	

Santa Clara	Chemical	Wells Sampled	Wells with Detections
	Dinoseb	44	
	Diquat dibromide	36	
	Diuron	1	
	Endosulfan	1	
	Endosulfan sulfate	1	
	Endothall	44	
	Endrin	35	
	Endrin aldehyde	1	
	Ethylene dibromide	44	
	Glyphosate, isopropylamine salt	36	
	Heptachlor	35	
	Heptachlor epoxide	35	
	Hexachlorobenzene	42	
	Lindane (gamma-BHC)	35	
	Methiocarb	5	
	Methomyl	44	
	Methoxychlor	35	
	Methyl bromide (bromomethane)	61	
	Metolachlor	40	
	Metribuzin	40	
	Molinate	44	
	Naphthalene	125	
	Ortho-dichlorobenzene	129	
	Oxamyl	44	
	Paraquat dichloride	4	
	Permethrin	1	
	Permethrin, other related	1	
	Picloram	44	
	Prometryn	10	
	Propachlor	40	
	Propoxur	1	
	Simazine	46	
	Thiobencarb	44	
	Toxaphene	35	
	Trichlorobenzenes	126	
	Trifluralin	4	
	Xylene	128	

Santa Cruz	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	3	
	1,1,2,2-Tetrachloroethane	16	
	1,2,4-Trichlorobenzene	16	
	1,2-D + 1,3-D + C-3 compounds	16	
	1,2-Dichloropropane	16	
	2,3,7,8-TCDD (dioxin)	2	
	2,4,5-T	13	
	2,4,5-TP (silvex)	18	
	2,4-D	18	
	3-Hydroxycarbofuran	4	
	Acrylonitrile	2	
	Alachlor	9	
	Aldicarb	4	
	Aldicarb sulfone	4	
	Aldicarb sulfoxide	4	
	Aldrin	7	
	Atrazine	9	
	Bentazon, sodium salt	18	
	Benzene (benzol)	16	1
	Bromacil	7	
	Butachlor	7	
	Carbaryl	4	
	Carbofuran	4	
	Carbon disulfide	3	1
	Chlordane	5	
	Chloromethane (methyl chloride)	16	1
	Chlorthal-dimethyl acid degradates	5	
	Dalapon	18	
	DBCP	3	
	Diazinon	6	
	Dicamba	18	
	Dieldrin	5	
	Dimethoate	7	
	Dinoseb	18	
	Diquat dibromide	18	
	Endothall	3	
	Endrin	7	
	Ethylene dibromide	3	
	Glyphosate, isopropylamine salt	3	
	Heptachlor	5	
	Heptachlor epoxide	5	
	Hexachlorobenzene	7	

Santa Cruz	Chemical	Wells Sampled	Wells with Detections
	Lindane (gamma-BHC)	7	
	Methomyl	4	
	Methoxychlor	7	
	Methyl bromide (bromomethane)	16	
	Metolachlor	7	
	Metribuzin	7	
	Molinate	7	
	Naphthalene	16	
	Ortho-dichlorobenzene	16	
	Oxamyl	4	
	Picloram	18	
	Prometryn	2	
	Propachlor	7	
	Simazine	9	
	Thiobencarb	8	
	Toxaphene	5	
	Trichlorobenzenes	16	
	Xylene	16	

Shasta	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	13	
	1,2,4-Trichlorobenzene	13	
	1,2-D + 1,3-D + C-3 compounds	13	
	1,2-Dichloropropane	13	
	Benzene (benzol)	13	
	Chloromethane (methyl chloride)	13	1
	Methyl bromide (bromomethane)	13	
	Ortho-dichlorobenzene	13	
	Trichlorobenzenes	13	
	Xylene	13	

Sierra	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	4	
	1,2,4-Trichlorobenzene	4	
	1,2-D + 1,3-D + C-3 compounds	4	
	1,2-Dichloropropane	4	
	Benzene (benzol)	4	
	Chloromethane (methyl chloride)	4	
	Methyl bromide (bromomethane)	4	
	Naphthalene	4	
	Ortho-dichlorobenzene	4	
	Trichlorobenzenes	4	
	Xylene	4	

Siskiyou	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	3	
	1,2,4-Trichlorobenzene	3	
	1,2-D + 1,3-D + C-3 compounds	3	
	1,2-Dichloropropane	3	
	Benzene (benzol)	3	
	Chloromethane (methyl chloride)	3	
	Methyl bromide (bromomethane)	3	
	Ortho-dichlorobenzene	3	
	Trichlorobenzenes	3	
	Xylene	3	

Solano	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	4	
	1,1,2,2-Tetrachloroethane	8	
	1,2,4-Trichlorobenzene	8	
	1,2-D + 1,3-D + C-3 compounds	7	
	1,2-Dichloropropane	8	
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-T	1	
	2,4,5-TP (silvex)	2	
	2,4-D	2	
	3-Hydroxycarbofuran	2	
	Alachlor	2	
	Aldicarb	2	
	Aldicarb sulfone	2	
	Aldicarb sulfoxide	2	
	Aldrin	2	
	Atrazine	2	
	Bentazon, sodium salt	2	
	Benzene (benzol)	8	
	Bromacil	2	
	Butachlor	2	
	Carbaryl	2	
	Carbofuran	2	
	Chlordane	2	
	Chloromethane (methyl chloride)	6	
	Chlorothalonil	1	
	Chlorthal-dimethyl acid degradates	1	
	Dalapon	2	
	DBCP	2	
	Diazinon	2	
	Dicamba	2	
	Dieldrin	2	
	Dimethoate	2	
	Dinoseb	2	
	Diquat dibromide	2	
	Endothall	2	
	Endrin	2	
	Ethylene dibromide	2	
	Glyphosate, isopropylamine salt	2	
	Heptachlor	2	
	Heptachlor epoxide	2	
	Hexachlorobenzene	2	

Solano	Chemical	Wells Sampled	Wells with Detections
	Lindane (gamma-BHC)	2	
	Methomyl	2	
	Methoxychlor	2	
	Methyl bromide (bromomethane)	6	
	Metolachlor	2	
	Metribuzin	2	
	Molinate	2	
	Naphthalene	7	
	Ortho-dichlorobenzene	8	
	Oxamyl	2	
	Picloram	2	
	Prometryn	1	
	Propachlor	2	
	Simazine	2	
	Thiobencarb	2	
	Toxaphene	2	
	Trichlorobenzenes	7	
	Xylene	8	

Sonoma	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	11	
	1,1,2,2-Tetrachloroethane	44	
	1,2,4-Trichlorobenzene	42	
	1,2-D + 1,3-D + C-3 compounds	44	
	1,2-Dichloropropane	44	
	2,3,7,8-TCDD (dioxin)	6	
	2,4,5-T	51	
	2,4,5-TP (silvex)	66	
	2,4-D	66	
	3-Hydroxycarbofuran	45	
	4(2,4-DB), dimethylamine salt	42	
	Acifluorfen, sodium salt	12	
	Acrylonitrile	9	
	Alachlor	61	
	Aldicarb	45	
	Aldicarb sulfone	45	
	Aldicarb sulfoxide	45	
	Aldrin	49	
	Atrazine	69	
	Bentazon, sodium salt	65	
	Benzene (benzol)	44	
	BHC (other than gamma isomer)	11	
	Bromacil	30	
	Butachlor	31	
	Carbaryl	45	
	Carbofuran	46	
	Carbon disulfide	9	
	Chlordane	56	
	Chlorobenzilate	11	
	Chloromethane (methyl chloride)	40	1
	Chloroneb	11	
	Chlorothalonil	16	
	Chlorthal-dimethyl acid degradates	28	
	Dalapon	65	
	DBCP	27	
	DDD	11	
	DDE	11	
	DDT	12	
	Diazinon	18	
	Dicamba	66	
	Dichlorprop, butoxyethanol ester	12	
	Dieldrin	50	

Sonoma	Chemical	Wells Sampled	Wells with Detections
	Dimethoate	30	
	Dinoseb	66	
	Diquat dibromide	53	
	Endosulfan	11	
	Endosulfan sulfate	11	
	Endothall	54	
	Endrin	55	
	Endrin aldehyde	11	
	Ethylene dibromide	37	
	Glyphosate, isopropylamine salt	7	
	Heptachlor	56	
	Heptachlor epoxide	56	
	Hexachlorobenzene	27	
	Lindane (gamma-BHC)	49	
	Methiocarb	24	
	Methomyl	45	
	Methoxychlor	56	
	Methyl bromide (bromomethane)	39	
	Metolachlor	31	
	Metribuzin	31	
	Molinate	31	
	Naphthalene	18	
	Ortho-dichlorobenzene	44	
	Oxamyl	53	
	Paraquat dichloride	6	
	Permethrin	11	
	Permethrin, other related	11	
	Picloram	65	
	Prometryn	22	
	Propachlor	32	
	Propoxur	23	
	Simazine	68	
	Thiobencarb	31	
	Toxaphene	56	
	Trichlorobenzenes	44	
	Trifluralin	16	
	Xylene	44	

Stanislaus	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	55	
	1,1,2,2-Tetrachloroethane	67	
	1,2,4-Trichlorobenzene	67	
	1,2-D + 1,3-D + C-3 compounds	67	
	1,2-Dichloropropane	67	
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-T	1	
	2,4,5-TP (silvex)	5	
	2,4-D	5	
	3-Hydroxycarbofuran	5	
	Alachlor	37	
	Aldicarb	5	
	Aldicarb sulfone	5	
	Aldicarb sulfoxide	5	
	Aldrin	5	
	Atrazine	37	
	Bentazon, sodium salt	5	
	Benzene (benzol)	67	
	Bromacil	37	
	Butachlor	37	
	Carbaryl	5	
	Carbofuran	5	
	Carbon disulfide	3	
	Chlordane	5	
	Chloromethane (methyl chloride)	67	
	Chlorothalonil	5	
	Dalapon	5	
	DBCP	102	32
	Diazinon	37	
	Dicamba	5	
	Dieldrin	5	
	Dimethoate	37	
	Dinoseb	5	
	Diquat dibromide	1	
	Endothall	24	
	Endrin	5	
	Ethylene dibromide	93	
	Glyphosate, isopropylamine salt	5	
	Heptachlor	5	
	Heptachlor epoxide	5	
	Hexachlorobenzene	5	
	Lindane (gamma-BHC)	5	

Stanislaus	Chemical	Wells Sampled	Wells with Detections
	Methomyl	5	
	Methoxychlor	5	
	Methyl bromide (bromomethane)	67	
	Metolachlor	37	
	Metribuzin	37	
	Molinate	37	
	Naphthalene	56	
	Ortho-dichlorobenzene	67	
	Oxamyl	5	
	Picloram	5	
	Prometryn	21	
	Propachlor	37	
	Simazine	37	
	Thiobencarb	37	
	Toxaphene	5	
	Trichlorobenzenes	67	
	Trifluralin	1	
	Xylene	67	

Sutter	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	5	
	1,2,4-Trichlorobenzene	5	
	1,2-D + 1,3-D + C-3 compounds	4	
	1,2-Dichloropropane	5	
	2,4,5-TP (silvex)	4	
	2,4-D	4	
	3-Hydroxycarbofuran	2	
	Alachlor	4	
	Aldicarb	2	
	Aldicarb sulfone	2	
	Aldicarb sulfoxide	2	
	Atrazine	4	
	Benzene (benzol)	5	
	Bromacil	4	
	Butachlor	4	
	Carbaryl	2	
	Carbofuran	2	
	Chloromethane (methyl chloride)	4	
	Dalapon	4	
	Diazinon	4	
	Dicamba	4	
	Dimethoate	4	
	Dinoseb	4	
	Glyphosate, isopropylamine salt	4	
	Methiocarb	2	
	Methomyl	2	
	Methyl bromide (bromomethane)	4	
	Metolachlor	4	
	Metribuzin	4	
	Molinate	4	
	Naphthalene	4	
	Ortho-dichlorobenzene	5	
	Oxamyl	2	
	Picloram	4	
	Prometon	4	
	Prometryn	4	
	Propoxur	2	
	Simazine	4	
	Thiobencarb	4	
	Trichlorobenzenes	4	
	Xylene	5	

Tehama	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	3	
	1,2,4-Trichlorobenzene	3	
	1,2-D + 1,3-D + C-3 compounds	3	
	1,2-Dichloropropane	3	
	Benzene (benzol)	3	
	Chloromethane (methyl chloride)	3	
	Methyl bromide (bromomethane)	3	
	Ortho-dichlorobenzene	3	
	Trichlorobenzenes	3	
	Xylene	3	

Trinity	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	1	
	1,2,4-Trichlorobenzene	1	
	1,2-D + 1,3-D + C-3 compounds	1	
	1,2-Dichloropropane	1	
	Benzene (benzol)	1	
	Chloromethane (methyl chloride)	1	
	Methyl bromide (bromomethane)	1	
	Ortho-dichlorobenzene	1	
	Trichlorobenzenes	1	
	Xylene	1	

Tulare	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	18	
	1,1,2,2-Tetrachloroethane	70	
	1,2,4-Trichlorobenzene	70	
	1,2-D + 1,3-D + C-3 compounds	70	
	1,2-Dichloropropane	70	
	2,3,7,8-TCDD (dioxin)	3	
	2,4,5-T	12	
	2,4,5-TP (silvex)	13	
	2,4-D	13	
	3-Hydroxycarbofuran	12	
	ACET (deethyl-simazine or deisopropyl-atrazine)	19	15
	Alachlor	20	
	Aldicarb	19	
	Aldicarb sulfone	19	
	Aldicarb sulfoxide	19	
	Aldrin	10	
	Atrazine	39	1
	Bentazon, sodium salt	12	
	Benzene (benzol)	70	
	Bromacil	39	10
	Butachlor	20	
	Carbaryl	12	
	Carbofuran	12	
	Carbon disulfide	6	
	Chlordane	12	
	Chloromethane (methyl chloride)	29	
	Chlorothalonil	10	
	Chlorthal-dimethyl (dacthal / DCPA)	3	
	Chlorthal-dimethyl acid degradates	3	
	Dalapon	12	
	DBCP	94	38
	Deethyl-atrazine	19	2
	Desmethylnorflurazon	19	7
	Diaminochlorotriazine (DACT)	19	15
	Diazinon	15	
	Dicamba	12	
	Dieldrin	10	
	Dimethoate	20	
	Dinoseb	13	
	Diquat dibromide	12	
	Diuron	19	12

Tulare	Chemical	Wells Sampled	Wells with Detections
	Endothall	12	
	Endrin	12	
	EPTC	4	
	Ethylene dibromide	90	
	Glyphosate, isopropylamine salt	12	
	Heptachlor	12	
	Heptachlor epoxide	12	
	Hexachlorobenzene	12	
	Hexazinone	19	
	Lindane (gamma-BHC)	12	
	Methiocarb	3	
	Methomyl	12	
	Methoxychlor	12	
	Methyl bromide (bromomethane)	29	
	Metolachlor	20	
	Metribuzin	20	
	Molinate	20	
	Naphthalene	66	
	Norflurazon	19	2
	Ortho-dichlorobenzene	70	
	Oxamyl	12	
	Picloram	12	
	Prometon	19	
	Prometryn	8	
	Propachlor	20	
	Simazine	39	14
	Terbacil	4	
	Thiobencarb	21	
	Toxaphene	12	
	Trichlorobenzenes	70	
	Trifluralin	10	
	Xylene	70	

Tuolumne	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	5	
	1,1,2,2-Tetrachloroethane	6	
	1,2,4-Trichlorobenzene	6	
	1,2-D + 1,3-D + C-3 compounds	6	
	1,2-Dichloropropane	6	
	Alachlor	4	
	Atrazine	4	
	Benzene (benzol)	6	
	Bromacil	4	
	Butachlor	4	
	Chloromethane (methyl chloride)	6	
	Diazinon	4	
	Dimethoate	4	
	Methyl bromide (bromomethane)	6	
	Metolachlor	4	
	Metribuzin	4	
	Molinate	4	
	Naphthalene	5	
	Ortho-dichlorobenzene	6	
	Propachlor	4	
	Simazine	4	
	Thiobencarb	4	
	Trichlorobenzenes	6	
	Xylene	6	

Ventura	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	27	
	1,1,2,2-Tetrachloroethane	28	
	1,2,4-Trichlorobenzene	28	
	1,2-D + 1,3-D + C-3 compounds	25	
	1,2-Dichloropropane	28	
	2,4,5-T	3	
	2,4,5-TP (silvex)	3	
	2,4-D	3	
	3-Hydroxycarbofuran	3	
	Alachlor	6	
	Aldicarb	3	
	Aldicarb sulfone	3	
	Aldicarb sulfoxide	3	
	Aldrin	3	
	Atrazine	15	
	Bentazon, sodium salt	3	
	Benzene (benzol)	28	
	Bromacil	5	
	Butachlor	6	
	Carbaryl	3	
	Carbofuran	3	
	Carbon disulfide	3	
	Chlordane	3	
	Chloromethane (methyl chloride)	25	1
	Dalapon	3	
	DBCP	11	
	Diazinon	6	
	Dicamba	3	
	Dieldrin	3	
	Dimethoate	5	
	Dinoseb	3	
	Diquat dibromide	3	
	Diuron	3	
	Endrin	3	
	Ethylene dibromide	12	
	Heptachlor	3	
	Heptachlor epoxide	3	
	Hexachlorobenzene	3	
	Lindane (gamma-BHC)	3	
	Methomyl	3	
	Methoxychlor	3	
	Methyl bromide (bromomethane)	25	

Ventura	Chemical	Wells Sampled	Wells with Detections
	Metolachlor	6	
	Metribuzin	6	
	Molinate	6	
	Naphthalene	25	
	Ortho-dichlorobenzene	28	
	Oxamyl	3	
	Picloram	3	
	Prometryn	6	
	Propachlor	5	
	Simazine	15	
	Thiobencarb	6	
	Toxaphene	3	
	Trichlorobenzenes	25	
	Xylene	28	

Yolo	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	19	
	1,1,2,2-Tetrachloroethane	21	
	1,2,4-Trichlorobenzene	21	
	1,2-D + 1,3-D + C-3 compounds	21	
	1,2-Dichloropropane	21	
	2,3,7,8-TCDD (dioxin)	9	
	2,4,5-T	20	
	2,4,5-TP (silvex)	20	
	2,4-D	20	
	3-Hydroxycarbofuran	20	
	4(2,4-DB), dimethylamine salt	2	
	Alachlor	21	
	Aldicarb	24	
	Aldicarb sulfone	24	
	Aldicarb sulfoxide	24	
	Aldrin	15	
	Atrazine	21	
	Bentazon, sodium salt	20	
	Benzene (benzol)	21	
	Bromacil	20	
	Butachlor	20	
	Carbaryl	20	
	Carbofuran	20	
	Chlordane	15	
	Chloromethane (methyl chloride)	21	7
	Chlorothalonil	15	
	Dalapon	20	
	DBCP	19	1
	Diazinon	20	
	Dicamba	20	
	Dieldrin	15	
	Dimethoate	20	
	Dinoseb	20	
	Diquat dibromide	18	
	Endothall	18	
	Endrin	15	
	Ethylene dibromide	23	
	Glyphosate, isopropylamine salt	18	
	Heptachlor	15	
	Heptachlor epoxide	15	
	Hexachlorobenzene	15	
	Lindane (gamma-BHC)	15	

Yolo	Chemical	Wells Sampled	Wells with Detections
	Methiocarb	2	
	Methomyl	20	
	Methoxychlor	15	
	Methyl bromide (bromomethane)	21	
	Metolachlor	20	
	Metribuzin	20	
	Molinate	20	
	Naphthalene	21	
	Ortho-dichlorobenzene	21	
	Oxamyl	20	
	Picloram	20	
	Prometryn	2	
	Propachlor	20	
	Propoxur	2	
	Simazine	21	
	Thiobencarb	20	
	Toxaphene	15	
	Trichlorobenzenes	21	
	Trifluralin	15	
	Xylene	21	

Yuba	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	4	
	1,1,2,2-Tetrachloroethane	29	
	1,2,4-Trichlorobenzene	29	
	1,2-D + 1,3-D + C-3 compounds	15	
	1,2-Dichloropropane	29	
	Benzene (benzol)	30	1
	Chloromethane (methyl chloride)	9	
	Methyl bromide (bromomethane)	9	
	Naphthalene	15	
	Ortho-dichlorobenzene	29	
	Trichlorobenzenes	15	
	Xylene	27	

APPENDIX B

Studies Included in the 2006 Update Report

A summary of the well sampling surveys that were added to the well inventory database during the period July 1, 2006, through June 30, 2007. The study number assigned by DPR is shown to the left. Surveys with no study number are designated "Memo Only."

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (Sanitary Engineering Branch)

STUDY	COUNTY *Study type (italics)*	WELLS SAMPLED	SAMPLING DATES	CHEMICALS SAMPLED (UNDERLINE INDICATES A VERIFIED DETECTION)
0023	56 counties *Mandated sampling*	3,169 wells	January through December 2006	116 chemicals

DEPARTMENT OF PESTICIDE REGULATION

STUDY	COUNTY *Study type (italics)*	WELLS SAMPLED	SAMPLING DATES	CHEMICALS SAMPLED (UNDERLINE INDICATES A VERIFIED DETECTION)
0440	Fresno/Tulare *Well network*	66 wells	May through June 2006	Atrazine, bromacil, simazine, diuron, prometon, hexazinone, norflurazon, DEA, ACET, DACT, desmethylnorflurazon
0465	Colusa/Fresno/Glenn/ Kings/Madera/Merced/ Tulare/Yolo *Ground water monitoring for aldicarb*	44 wells	February through May 2006	Aldicarb, aldicarb sulfone, aldicarb sulfoxide
0467	Merced *Four section survey*	5 wells	June 2006	Aldicarb, aldicarb sulfone, aldicarb sulfoxide
0468	Kern *Four section survey*	3 wells	June 2006	Aldicarb, aldicarb sulfone, aldicarb sulfoxide
0469	San Joaquin *Four section survey*	1 well	October 2006	Methomyl
Memo Only	Los Angeles	0 wells Methyl bromide	December 2006	Initial reported residues of methyl bromide were determined to be a typographical error in the CDPH report. The correct value was 'none detected.' A retest of the well had no methyl bromide residues.

STUDY	COUNTY *Study type (italics)*	WELLS SAMPLED	SAMPLING DATES	CHEMICALS SAMPLED (UNDERLINE INDICATES A VERIFIED DETECTION)
Memo Only	Riverside	0 wells Alachlor, Atrazine, Diazinon, Metolachlor, Metribuzin, Molinate, Prometryn, Simazine, Thiobencarb	May 2006	The analyzing lab reported the original sample container was not intact and low in volume. Sample was diluted to reach sufficient volume for testing. Results should not have been reported to CDPH. A retest of the well had no pesticide residues.
Memo Only	Sacramento	0 wells 2,4-D	September 2006	Well was retested 1 month later and no 2,4-D residues were detected. There is no history of any pesticide detections in this well.

APPENDIX C

Summary of Compounds Detected and Reported to DPR

The following table provides updated information, as of June 30, 2007, of all reported pesticide detections in ground water. It includes the historical range of residue concentrations for all compounds detected and the range of residue concentrations for compounds detected during this fiscal year, from July 1, 2006, to June 30, 2007. If the compound was not detected in the current fiscal year, a dash is shown in the column.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
(S)-metolachlor	11/2 counties 94/2 wells	0.036 - 0.1	-	US EPA SNARL - 100	Selective herbicide. AR[b]. Detections reported by USGS were not verified in subsequent DPR sampling.
1,1,2,2-Tetrachloroethane	57/6 counties 8,814/6 wells	0.83 - 51.4		CDPH - 1 PHG - 0.1	Herbicide. NR[c]
1,2,4-Trichlorobenzene	58/3 counties 7,986/5 wells	0.53 - 21		CDPH - 5 PHG - 0.5	Herbicide. NR.
1,2-D, 1,3-D, and C-3 compounds	57/2 counties 7,532/2 wells	0.67 - 1.2	0.67	See 1,2-D and 1,3-D limits below	Fumigant. NR. Regulations were adopted in 1985 that prohibit the use or sale of pesticides in California in which 1,2-D exceeds 0.5% of the total formulation. Detections referred to SWRCB.
1,2-Dichloropropane (1,2-D)	58/24 counties 12,200/171 wells	0.1 - 160	0.5 - 5.4	CDPH - 5 US EPA - 5 PHG - 0.5	Fumigant. NR. Source of residues were determined by DPR to be due to historical non-point source, legal, agricultural use. Regulations were adopted in 1985 that prohibit the use or sale of pesticides in California in which 1,2-D exceeds 0.5% of the total formulation. Detections referred to SWRCB.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
1,3-Dichloropropene (1,3-D)	56/3 counties 9,466/6 wells	0.84 - 1.9	-	CDPH - 0.5 PHG - 0.2	Fumigant. AR.
2,3,7,8-TCDD (dioxin)	35/1 counties 1,599/1 wells	13.42	13.42	CDPH – 0.00003	Contaminant and manufacturing byproduct of some pesticides. The 13.42 ppb report was determined to be an error. No dioxin was actually found.
2,4,5-T	46/2 counties 1,882/2 wells	0.02 - 0.21	-	US EPA IRIS - 70 US EPA SNARL - 70	Herbicide. NR.
2,4,5-TP (silvex)	58/3 counties 6,290/4 wells	0.15 - 1.4	-	CDPH - 50 US EPA - 50 PHG - 25	Herbicide. NR.
2,4-D	58/12 counties 6,984/17 wells	0.3 - 46	0.3	CDPH - 70 US EPA - 70 PHG - 70	Selective herbicide. AR.
2,4-DP, isooctyl ester	9/2 counties 106/3 wells	0.01 - 0.06	-	No limits established	Selective herbicide. AR.
2-Hydroxycyclohexyl hexazinone	8/1 counties 69/1 wells	0.126 - 0.126	-	No limits established	Breakdown product of hexazinone.
Acenaphthene	24/1 counties 816/25 wells	98 - 117	-	U.S. EPA IRIS Rfd - 420	Fungicide. NR.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[(a)]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
ACET	35/17 counties 1,139/342 wells	0.023 - 6	0.059 - 1.54	No limits established	Breakdown product of atrazine and simazine. This compound has contaminated ground water due to legal agricultural use (LAU) of atrazine or simazine. It is considered as toxic as atrazine and simazine and detections of ACET have been used to regulate the use of both parent compounds. Detections were due to LAU[e].
Alachlor	55/5 counties 7,605/5 wells	0.1 - 9	0.24 - 1.1	CDPH - 2 US EPA - 2 PHG - 4	Selective herbicide. NR.
Alachlor ESA	9/5 counties 100/19 wells	0.05 - 1.38	-	No limits established	Breakdown product of alachlor. Alachlor is AR. DPR determined that contamination of ground water occurred from non-point source pesticide applications. DEG[f]
Alachlor OXA	9/1 counties 100/1 wells	0.05 - 0.051	-	No limits established	Breakdown product of alachlor. Alachlor is AR. DEG
Aldicarb	55/2 counties 5,689/4 wells	1.1 - 7.2	-	US EPA - 3 CDPH AL - 7	Systemic insecticide. AR.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Aldicarb sulfone	51/6 counties 4,477/61 wells	0.05 - 1281	-	US EPA - 3 US EPA SNARL - 10 (10-day)	Breakdown product of aldicarb. Aldicarb is AR. This compound has contaminated ground water due to LAU of aldicarb.
Aldicarb sulfoxide	51/5 counties 4,483/25 wells	0.06 - 13.2	-	US EPA - 4 US EPA SNARL - 10 (10-day)	Breakdown product of aldicarb. Aldicarb is AR. This compound has contaminated ground water due to LAU of aldicarb.
Aldrin	54/2 counties 5,359/24 wells	21 - 107	-	CDPH AL - 0.002 US EPA IRIS - 0.21 US EPA SNARL - 0.3 (10-day)	Insecticide. NR.
Atrazine	57/24 counties 12,095/302 wells	0.001 - 8.5	0.088 - 0.57	CDPH - 1 US EPA - 3 PHG - 0.15	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Azinphos-methyl	43/1 counties 1,292/1 wells	0.014 - 0.014	-	No limits established	Insecticide. AR.
Benomyl	38/2 counties 1,090/2 wells	190 - 500	-	US EPA IRIS - 350	Systemic fungicide. AR.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Bentazon, sodium salt	55/17 counties 5,499/113 wells	0.02 - 20	-	CDPH - 18 PHG - 200	Selective herbicide. AR
Benzene (benzol)	57/12 counties 7,610/23 wells	0.2 - 102	0.71 - 73.4	CDPH - 1 US EPA - 5 PHG - 0.15	Benzene was an ingredient in some early grain fumigants. NR. Non-agricultural uses of industrial chemicals may contribute to these findings. Detections referred to SWRCB.
BHC	47/1 counties 2,112/1 wells	0.08 - 0.08	-	No limits established	Insecticide. NR.
Bromacil	56/19 counties 9,873/260 wells	0.025 - 23	0.052 - 5.17	US EPA SNARL - 90	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Butachlor	52/2 counties 5,280/2 wells	0.39 - 0.43	0.43	No limits established	Selective herbicide. NR.
Captan	38/2 counties 1,470/3 wells	0.1 - 0.5	-	CDPH AL - 1.5, US EPA IRIS - 910	Fungicide. AR.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Carbaryl	53/4 counties 5,683/4 wells	2 - 55	-	CDPH AL - 700, US EPA IRIS - 700 US EPA SNARL - 700	Insecticide. AR.
Carbofuran	54/4 counties 6,271/5 wells	0.016 - 0.686	-	CDPH - 18 US EPA - 40 PHG - 1.7	Insecticide. AR.
Carbon disulfide	32/6 counties 663/13 wells	0.2 - 5	0.6 - 1.2	CDPH AL - 160, US EPA IRIS - 700	Fumigant. NR.
Chlordane	56/1 counties 6,617/1 wells	20 - 20	-	CDPH - 0.1 US EPA - 2 PHG - 0.03	Insecticide. NR.
Chloromethane	57/31 counties 7,518/145 wells	0.25 - 37	0.25 - 8.1	US EPA SNARL - 3	Fumigant. NR. Non-pesticidal uses of industrial chemicals may contribute to these findings. Detections referred to SWRCB.
Chlorothalonil	51/1 counties 4,339/1 wells	0.8 - 1.1	-	US EPA IRIS - 110 US EPA SNARL - 200 (10-day)	Fungicide. AR.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Chlorpyrifos	38/2 counties 1,404/3 wells	0.02 - 0.06	-	US EPA IRIS - 21 US EPA SNARL - 20	Insecticide. AR.
Chlorthal-dimethyl	33/4 counties 1,521/9 wells	0.03 - 300	-	US EPA IRIS - 70 US EPA SNARL - 70	Selective herbicide. AR.
Chlorthal-dimethyl acid breakdown products	42/11 counties 1,655/96 wells	0.03 - 10.9	1.05 – 13	No limits established	Breakdown product of chlorthal-dimethyl. DPR determined that this compound contaminated ground water due to non-point source applications of the parent, chlorthal-dimethyl. DEG
Coumaphos	11/1 counties 132/1 wells	1 - 1	-	No limits established	Insecticide. AR.
DACT	24/9 counties 554/174 wells	0.05 - 6.9	0.051 - 6.23	No limits established	Breakdown product of atrazine and simazine. This compound has contaminated ground water due to LAU of atrazine or simazine. It is considered as toxic as atrazine and simazine and detections of DACT have been used to regulate the use of both compounds. Detections were determined to be LAU.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Dalapon	50/1 counties 4,804/5 wells	1 - 17	-	CDPH - 200 US EPA - 200 PHG - 790	Selective herbicide. NR.
DBCP	55/25 counties 12,343/3,071 wells	0.001 - 8000	0.01 - 1.7	CDPH - 0.2 US EPA - 0.2 PHG - 0.0017	Soil fumigant. NR. Source of residues considered by DPR to be from historical non-point source, LAU. Detections referred to SWRCB.
DDD	41/1 counties 1,843/1 wells	1.04 - 1.04	-	No limits established	Insecticide. NR.
DDE	43/3 counties 3,347/6 wells	0.01 - 0.09	-	No limits established	Breakdown product of DDT.
DDT	41/3 counties 2,053/4 wells	0.02 - 0.12	-	US EPA IRIS - 3.5	Insecticide. NR.
Deethyl-Atrazine (DEA)	36/17 counties 1,184/92 wells	0.001 - 2	0.053 - 0.192	No limits established	Breakdown product of atrazine. This compound has contaminated ground water due to LAU of atrazine. It is considered as toxic as atrazine and detections of DEA have been used to regulate the use of atrazine. Detections were determined to be LAU.
Desmethylnorflurazon	4/3 counties 130/37 wells	0.05 - 1.1	0.054 - 1.1	No limits established	Breakdown product of norflurazon, which is AR. DPR assumes that this compound contaminated ground water due to non-point source applications of the parent, norflurazon and therefore detections are the result of LAU.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Demeton	46/1 counties 1,774/1 wells	1 - 1	-	US EPA IRIS - 0.3	Systemic-insecticide. NR.
Diazinon	56/8 counties 6,965/10 wells	0.01 - 507	0.28	CDPH AL - 6 US EPA SNARL - 0.6	Insecticide. AR. Investigation by DPR found the detection to be due to a transcription error.
Dicamba	52/5 counties 4,612/7 wells	0.01 - 0.5	-	US EPA IRIS - 210 US EPA SNARL - 200	Selective herbicide. AR.
Dichlorprop	3/1 counties 49/1 wells	6.8 - 6.8	-	No limits established	Hormone-systemic type herbicide. NR.
Dichlorprop, butoxyethanol ester	27/3 counties 416/3 wells	0.1 - 6.8	-	No limits established	Hormone-systemic type herbicide. NR.
Dieldrin	56/5 counties 5,414/6 wells	0.05 - 7	-	CDPH AL - 0.002	Insecticide. NR.
Dimethoate	54/3 counties 6,471/3 wells	0.38 - 10	-	CDPH AL – 1, US EPA IRIS - 1.4	Insecticide. AR.
Dinoseb	50/1 counties 5,839/1 wells	30 - 30	-	CDPH - 7 US EPA - 7	Herbicide, desiccant. AR

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Diquat dibromide	46/4 counties 4,423/7 wells	2 - 549.1	-	CDPH - 20 US EPA - 20 PHG - 15	Selective herbicide. AR.
Diuron	54/22 counties 7,775/481 wells	0.015 - 5.2	0.053 - 1.01	US EPA IRIS - 14 US EPA SNARL - 10	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections reported this year were determined to be due to LAU.
Endosulfan	48/4 counties 2,806/10 wells	0.01 - 34.7	-	US EPA IRIS - 42	Insecticide. AR.
Endosulfan sulfate	47/2 counties 2,160/3 wells	0.15 - 0.48	-	No limits established	Breakdown product of endosulfan. Endosulfan is AR.
Endothall, disodium salt	49/2 counties 3,906/3 wells	100 - 548.1	-	CDPH - 100 US EPA - 100 PHG - 580	Selective herbicide. NR. Early 1989 detections were not confirmed by DPR monitoring. Inactive in 1992.
Endrin	58/4 counties 6,968/5 wells	0.03 - 2	-	CDPH - 2 US EPA - 2 PHG - 2	Insecticide. NR.
EPTC	40/1 counties 2,256/1 wells	5.6 - 170	-	US EPA IRIS - 180	Selective herbicide. AR.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Ethylene dibromide	56/20 counties 8,355/183 wells	0.006 - 4.7	0.02 - 0.42	CDPH - 0.05 US EPA - 0.05 PHG - 0.01	Fumigant, insecticide, nematicide. NR since January 1987. Source of residues considered by DPR to be from historical non-point source, LAU. Referred to SWRCB.
Ethylene dichloride	11/1 counties 197/1 wells	2.9 - 2.9	-	CDPH - 0.5 US EPA - 5 PHG - 0.4	Fumigant. NR.
Ethylene thiourea	8/1 counties 67/1 wells	0.725 - 0.725	-	US EPA IRIS - 0.6 US EPA SNARL - 300 (10-day)	Fumigant. NR.
Glyphosate, isopropylamine salt	51/1 counties 4,483/1 wells	20 - 20	-	CDPH - 700 US EPA - 700 PHG - 1,000	Nonselective, postemergence herbicide. AR.
Heptachlor	56/4 counties 6,387/12 wells	0.01 - 0.25	-	CDPH - 0.01 US EPA - 0.4 PHG - 0.008	Insecticide. NR.
Heptachlor epoxide	56/1 counties 6,383/1 wells	0.01 - 0.01	-	No limits established	Breakdown product of heptachlor. Heptachlor is NR.
Hexazinone	46/9 counties 2,058/19 wells	0.05 - 0.55	-	US EPA IRIS - 230 US EPA SNARL - 400	Selective herbicide. AR. Detections have been determined to result from non-point source pesticide applications but no LAU determination has been made.
Lindane (gamma-BHC)	58/3 counties 7,048/5 wells	0.05 - 180	0.19	CDPH - 0.2 US EPA - 0.2 PHG - 0.032	Insecticide. AR.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Malathion	37/1 counties 1,220/1 wells	0.32 - 0.32	-	CDPH AL – 160, US EPA IRIS - 140 US EPA SNARL - 100	Insecticide. AR.
Merphos	21/2 counties 427/2 wells	1 - 1.5	-	US EPA IRIS - 0.2	Defoliant. NR.
Methomyl	52/2 counties 5,231/2 wells	0.8 - 15	-	US EPA IRIS - 180 US EPA SNARL - 200	Insecticide. AR.
Methoxychlor	57/1 counties 6,568/2 wells	0.5 - 0.5	-	CDPH - 30 US EPA - 40 PHG - 30	Insecticide. NR.
Methyl bromide	58/13 counties 11,854/27 wells	0.5 - 6.4	0.6 - 0.88	US EPA IRIS - 9.8 US EPA SNARL - 10	Fumigant. AR. Detections are CUI[d].
Methylene chloride	6/2 counties 61/6 wells	3 - 6	-	PHG - 4	Fumigant. NR.
Metolachlor	52/1 counties 5,515/1 wells	1.1	1.1	SNARL - 70	Selective herbicide. AR. Detection determined to be a laboratory reporting error.
Metolachlor ESA	9/6 counties 100/32 wells	0.05 - 24	-	No limits established	Breakdown product of metolachlor. Metolachlor is AR. DPR determined that contamination of metolachlor in ground water occurred from non-point source pesticide applications. DEG

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Metolachlor OXA	9/4 counties 100/11 wells	0.05 - 2.65	-	No limits established	Breakdown product of metolachlor. Metolachlor is AR. DPR determined that contamination of metolachlor in ground water occurred from non-point source pesticide applications. DEG
Metribuzin	54/1 counties 7,014/1 wells	1.1	1.1	US EPA SNARL - 70	Herbicide. AR
Mexacarbate	23/1 counties 427/1 wells	22	-	No limits established	Insecticide. NR
Molinate	55/7 counties 7,195/14 wells	0.002 - 29	1	CDPH - 20 US EPA IRIS - 14	Selective herbicide. AR.
Molinate sulfoxide	17/1 counties 210/1 wells	0.8	-	No limits established	Breakdown product of molinate. Molinate is AR. DEG
Monuron	25/1 counties 504/4 wells	0.04 - 2	-	No limits established	Herbicide. NR.
MTP	10/1 counties 274/1 wells	2.41 - 2.55	-	No limits established	Breakdown product of chlorthal-dimethyl. AR. DEG
Naled	16/1 counties 221/1 wells	5	-	US EPA IRIS - 14	Insecticide. AR.
Naphthalene	57/11 counties 7,701/25 wells	0.5 - 66	5.5	CDPH A L-170, US EPA IRIS - 14 US EPA SNARL - 100	Fumigant. NR in California since 1991.
Norflurazon	31/6 counties 804/50 wells	0.022 - 1.62	0.054 - 1.29	US EPA IRIS - 280	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Ortho-Dichlorobenzene	58/9 counties 11,060/10 wells	0.56 - 12	-	CDPH - 600 US EPA - 600 PHG - 600	Herbicide and insecticide. NR.
Paraquat dichloride	31/3 counties 832/5 wells	0.91 - 16	-	US EPA IRIS - 3.2 US EPA SNARL - 30	Herbicide. AR.
Picloram	51/3 counties 4,875/5 wells	0.1 - 1.1	-	CDPH - 500 US EPA - 500 PHG - 500	Selective herbicide. NR.
Prometon	49/13 counties 4,888/51 wells	0.05 - 80	0.058	US EPA IRIS - 110 US EPA SNAR L- 100	Nonselective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Prometryn	57/4 counties 8,336/4 wells	0.1 - 2.3	2.3	US EPA IRIS - 28	Selective herbicide. AR.
Propachlor	52/1 counties 5,195/1 wells	1.1 - 1.1	-	US EPA IRIS - 91 US EPA SNARL - 90	Selective herbicide. NR.
Propazine	41/1 counties 1,099/1 wells	0.2 - 0.2	-	US EPA IRIS - 14 US EPA SNARL - 10	Selective herbicide. NR.
Propham	35/1 counties 1,063/1 wells	6 - 6	-	US EPA IRIS - 140 US EPA SNARL - 100	Selective herbicide. NR.

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Propoxur	45/2 counties 1,405/2 wells	4 - 5	-	CDPH AL – 30, US EPA IRIS - 2.8 US EPA SNARL - 3	Insecticide. AR.
Simazine	57/29 counties 12,639/799 wells	0.002 - 49.2	0.053 - 1.1	CDPH - 4 US EPA - 4 PHG - 4	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Tebuthiuron	24/4 counties 163/4 wells	0.005 - 22.1	-	US EPA IRIS - 490 US EPA SNARL - 500	Herbicide. AR.
Tetrachloroethylene	9/3 counties 193/5 wells	0.2 - 2.5	-	CDPH - 5 US EPA - 5 PHG - 0.06	Insecticide. NR.
Tetrachlorvinphos	23/1 counties 189/1 wells	1 - 1	-	US EPA IRIS - 210	Insecticide. AR.
Thiobencarb	55/6 counties 6,965/9 wells	0.006 - 8.7	1.1	PHG - 70 US EPA IRIS - 70	Selective herbicide. AR.
Thiram	2/1 counties 18/4 wells	5 - 17	-	US EPA IRIS - 35	Fungicide. AR.
Toxaphene	58/4 counties 7,091/6 wells	1 - 57	-	CDPH - 3 US EPA - 3 PHG - 0.03	Insecticide. NR.
TPA	10/8 counties 274/35 wells	0.1 - 15	-	No limits established	Breakdown product of chlorthal-dimethyl. DEG

Compound Detected	Number of Counties and Wells Tested / Positive for Compound	Historical Range of Residue Concentrations (ppb)	Fiscal Year 2006/2007: Range of Residue Concentrations (ppb)	Water Quality Limits (ppb)[a]	Fiscal Year 2006/2007 Information: Type of Compound, Registration Status, Comments
Trichlorobenzenes	57/5 counties 7,448/5 wells	0.6 - 3.9	-	No limits established	Herbicide. NR.
Trifluralin	36/2 counties 1,150/2 wells	0.01 - 0.9	-	US EPA SNARL - 5	Selective herbicide. AR.
Xylene	58/31 counties 10,895/109 wells	0.25 - 1100	0.5 - 12	CDPH - 1,750 US EPA - 10,000 PHG -1,800	Insecticide (NR) and solvent. Non-pesticidal uses of industrial chemicals may contribute to these findings. Detections referred to SWRCB.

[a] CDPH = California Department of Public Health' drinking water standard, maximum contamination level (MCL); CDPH-AL = California Department of Public Health' action level; US EPA= U.S. Environmental Protection Agency's MCL; PHG = Office of Environmental Health Hazard Assessment's California public health goal; US EPA IRIS = U.S. EPA integrated risk information system reference dose as a drinking water level; US EPA SNARL = US EPA suggested no-adverse-response level for toxicity other than cancer risk.
Marshack, J.B. 2003. A Compilation of Water Quality Goals. Definition of water quality limits is given in Appendix D (Glossary of Terms).
[b] AR: Actively registered in California
[c] NR: Not registered in California
[d] CUI: Currently under investigation by DPR
[e] LAU: Legal agricultural use
[f] DEG: This compound is a degradate of a pesticide. A review of the compound by DPR's Medical Toxicology Branch's personnel determined that toxicological data are equivocal that at the detection levels that were reported, this compound did not pose a threat to public health; so no further action required.

APPENDIX D

Glossary of Terms

AB 1803 - (1983) (Chapter 881, Statutes of 1983) A law that required the California Department of Public Health (CDPH) to evaluate each public water system to determine its potential for contamination. The systems were required to conduct specified water analyses and to report those results. Monitoring required by AB 1803 was completed in June 1989.

AB 2021 - See "Pesticide Contamination Prevention Act."

Action level (AL) – ALs are published by the California Department of Public Health, Office of Drinking Water, and are based mainly on health affects. ALs are advisory to water suppliers. Although not legally enforceable, the majority of water suppliers have complied with action levels as though they were maximum contaminant levels.

Active ingredient - The chemical or chemicals in a pesticide formulation that are biologically active and which are capable, in themselves, of preventing, destroying, repelling or mitigating insects, fungi, rodents, weeds, or other pests.

Agricultural Commissioner - For each county in California, under supervision of DPR, the Agricultural Commissioner enforces the laws and regulations pertaining to agricultural and structural pest control and all other pesticide uses.

Agricultural use - (See also "legal agricultural use" and "legal agricultural use determination.") The use of any pesticide or method or device for the control of plant or animal pests, or any other pests, or the use of any pesticide for the regulation of plant growth or defoliation of plants. It excludes the sale or use of pesticides in properly labeled packages or containers which are intended only for any of the following: home use, use in structural pest control, industrial or institutional use, the control of an animal pest under the written prescription of a veterinarian, local districts, or other public agencies which have entered into and operate under a cooperative agreement with the Dept. of Public Health pursuant to section 2426 of the Health and Safety Code. (Food and Agr. Code, section 11408)

Analysis – For the well inventory data, it is the act of determining whether a substance is present in a water sample using laboratory methodology.

Aquifer - A geologic formation, group of formations, or part of a formation, that is water bearing and which transmits water in sufficient quantity to supply springs and pumping wells.

Basin irrigation – ASAE (2001) definition: irrigation by flooding areas of level land surrounded by dikes. Used interchangeably with level border irrigation, but usually refers to smaller areas.

Birth Defect Prevention Act (BDPA) - (SB 950, 1984) A law requiring DPR to acquire certain toxicological data for registered pesticides in order to make a scientific determination that their uses will not cause significant adverse health effects. The BDPA prohibits the registration of any

new pesticide active ingredient if required mandatory health effects studies are missing, incomplete, or invalid. Pesticide active ingredients already registered that are identified as having the potential to cause significant adverse health effects following a thorough review by DPR scientific staff will be canceled.

Chemigation - The application of pesticides through irrigation water, using irrigation techniques and equipment.

Confirmed detection - For purposes of the well inventory database, the detection of a compound in two discrete samples taken from the same well during a single monitoring survey.

Database record - Each chemical analysis of a well water sample for a pesticide residue or related chemical constitutes one record in the database. Each record may contain up to 149 columns of data.

Degradation - The breakdown of a chemical by the action of microbes, water, air, sunlight, or other agents.

Detection - A well water sample in which the presence of a pesticide chemical is detected at or above the, minimum detection limit of the analytical instruments used for analysis of the compound under investigation. A detection may be designated as confirmed or unconfirmed.

Discrete sample - Samples taken separately from a well; not a single sample split into smaller samples.

Established PMZ - A Pesticide Management Zone (PMZ) (see def.) formally listed in section 6802, Title 3 of the California Code of Regulations (3CCR).

Ground water protection areas (GWPA) - Areas of the state identified by DPR that are vulnerable to pesticide movement to ground water. GWPAs are identified by base meridian, township, range and section. Currently, there are leaching GWPAs and runoff GWPAs. GWPAs include all sections of land where pesticides have been found in ground water due to Legal agricultural use (see Pesticide Management Zones*)* and additional sections of land that contain similar characteristics of areas where pesticides have been found in ground water.

Ground Water Protection List (GWPL) - A list, required by the PCPA and established in section 6800 (3CCR), of pesticides having the potential to pollute ground water. The GWPL is divided into two sublists. Sublist (a) is comprised of chemicals that have been detected in ground water as a result of legal agricultural use. Pesticide active ingredients whose physicochemical properties exceed the specific numerical values (see def.) and that are labeled for soil application under certain conditions or are required or recommended to be followed by flood or furrow irrigation within 72 hours are placed on sublist (b) of the GWPL. Chemicals placed on the GWPL sublist (a) are subject to certain restrictions.

Health advisory level (HAL) - An advisory number published by U.S. EPA's Office of Drinking Water and Office of Water Regulations and Standards. Short-term (10 days or less), long-term (7

years or less), and lifetime exposure health advisories for non-carcinogens and suspected human carcinogens are included where data sufficient for derivation of the advisories exist. HALs are a guideline, which include a margin of safety to protect human health. For lifetime HALs, water-containing pesticides at or below the HAL is acceptable for drinking every day over the course of one's lifetime.

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

Large water system well - A well supplying 200 or more service connections.

Leaching - A pathway by which agricultural chemicals may reach ground water; the process by which residues are dissolved in soil water and follow the movement of water through the soil matrix as it recharges a ground water aquifer.

Legal agricultural use - The application of a pesticide, according to its labeled directions and in accordance with federal and state laws and regulations, for agricultural use as defined in Food and Agricultural Code, section 11408. (See "agricultural use.”)

Legal agricultural use determination - A determination required by section 13149 (FAC) and based upon the following criteria: (1) the detection of a pesticide ingredient or its breakdown product in ground water that has been verified according to DPR criteria; (2) a detection of the same pesticide ingredient or its breakdown product in ground water, verified at a second site within a four-section area of the original detection; (3) the detected pesticide ingredient must be formulated in a product which has one or more agricultural uses listed on its label; (4) the application of the agricultural use product(s) in the vicinity of the reported detections should either be documented historically, confirmed by local interviews, or presumed by the identification of a target pest or commodity; and (5) the detected pesticide is not exclusively due to illegal use or a point source. The director may consider a preponderance of evidence as meeting these criteria.

Maximum contaminant levels (MCLs) - MCLs are part of the drinking water quality standards adopted by CDPH and by US EPA under the Safe Drinking Water Act. MCLs are formally established in regulation and are enforceable by CDPH on water suppliers.

Minimum detection limit (MDL) - The lowest concentration of a substance that a method of analysis can quantify reliably. The MDL is established in the protocol for a study either as a result of a method validation study or by using accepted proven analytical methods (e.g., EPA methods).

Mitigation measure - An activity to substantially reduce any adverse impact of a given condition.

Model - Mathematical equations that represent certain processes. These equations can be implemented in a computer program in order to facilitate calculations and test model predictions against measured data.

Monitoring well - A well used principally for any of the follow purposes: (1) observing ground water levels and flow conditions, (2) obtaining samples for determining ground water quality, or (3) evaluating hydraulic properties of water-bearing strata.

Non-crop areas - These areas include rights-of-way, golf courses, cemeteries, and industrial and institutional sites. Agricultural use of pesticides in non-crop areas include weed control around buildings on a farm or on rights-of-way, irrigation canals and ditches, golf courses, parks, and cemeteries.

Non-point source – Contamination that cannot be traced to a small definable location (compare with "point source"), e.g., applications of agricultural chemicals to crops.

Organic matter - Plant and animal debris or remains found in the soil in all stages of decay. The major elements in organic matter are oxygen, hydrogen, and carbon.

Parts per billion (ppb) - A way to express the concentration of a chemical in a liquid, solid, or in air. Since one liter of water weighs one billion micrograms, one microgram of a chemical in one liter of water is equal to one ppb.

Restricted material permit – Restricted material permits are issued by Agricultural Commissioners for a specific site for the use of chemicals that have usually been designated as restricted pesticides. Restricted pesticides, for various reasons, are potentially more hazardous than other pesticides.

Pest control adviser (PCA) - A person, licensed by DPR and registered with the Agricultural Commissioner, who makes pest control recommendations. All agricultural use recommendations must be in writing and contain certain information. A PCA must complete continuing education requirements before his/her license may be renewed.

Pesticide Contamination Prevention Act (PCPA, AB 2021)-A law, effective January 1, 1986, which added agricultural use sections 13141 through 13152 to Division 7 of the FAC. The PCPA requires the following: (1) each registrant of an agricultural use pesticide to submit environmental fate data to DPR; (2) the director to use those data to establish a list of pesticides with the potential to pollute ground water (Ground Water Protection List); (3) the director to monitor ground water for these pesticides; (4) all local, county and state agencies to report to DPR the results of pesticides sampled in ground water; (5) the director to maintain a specified well sampling database and to post certain information annually on its website about pesticides in ground water and (6) a specified subcommittee and the director to conduct a formal review to determine if continued use of a pesticide can be allowed if it is detected and verified in ground water due to legal agricultural use.

Pesticide Detection Response Process (PDRP) – A process, established pursuant to sections 13149 through 13151 (FAC), in which the detection of a pesticide residue in ground water is investigated, evaluated, and, when necessary, mitigated. As part of the process, a determination

must be made that the detection resulted from a legal agricultural use application of the pesticide. As a result of this process, the use of a pesticide in California may be modified or cancelled.

Pesticide Management Zone (PMZ) - A former geographic surveying unit of approximately one square mile, which is vulnerable to ground water contamination based on detections of a pesticide-related compound in ground water due to legal, agricultural use. PMZs were pesticide specific. The use of a pesticide inside its PMZs was subject to certain ground water protection restrictions and requirements. PMZs were renamed GWPAs in May 2004.

Physicochemical - The types of behavior that a substance exhibits in chemical reactions are called its chemical properties; other characteristics that are typical of a substance are called its physical properties. Taken together, the chemical and physical properties of a substance are called its physicochemical properties.

Point source - A source of contamination, such as a spill or at a waste site that is initially deposited and concentrated in a small, well-defined area. 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.

Range - A single series or row of townships, each six miles square, extending parallel to, and numbered east and west from, a survey base meridian line. (See well numbering system.)

Recommended PMZ - A section of land that had been identified as sensitive to ground water pollution by specific pesticides base on detections in ground water but not formally adopted into section 6802 (3CCR).

Registered pesticide - A pesticide product approved by the US EPA and DPR for use in California.

Regulations - These are adopted by state agencies to implement or clarify statutes enacted by the California Legislature. They can also be adopted in response to federal legislation, court decisions, changing technologies, and concerns for the health and well being of the residents of California.

Replicate sample - A discrete sample taken from a well at the same time as the initial detection sample; not a single sample split into multiple samples.

Restricted material - Compounds designated as "restricted materials" in section 6400 (3CCR) that, for various reasons, are potentially more hazardous to people, animals, or the environment than other pesticides. As a result, the use of these materials is regulated more closely and is permitted only when additional precautionary measures are taken where applicable. Certain reporting requirements and dealer responsibilities apply to the use of restricted materials.

Section - A land unit of 640 acres or one square mile, equal to l/36 of a township. (See well numbering system.)

Small public water system well - A well serving fewer than 200 connections.

Specific numerical values (SNV) - Certain numeric threshold values that the PCPA requires to be established for the following physical and chemical properties of pesticide active ingredients: water solubility, soil adsorption coefficient, hydrolysis, aerobic and anaerobic soil metabolism, and field dissipation (the field dissipation SNV has not been established). The PCPA associates these properties with the longevity and mobility of a chemical in the soil and requires the establishment of SNVs in regulation as a means of predicting which pesticides are likely to pollute ground water.

State Well Number - See “well numbering system.”

Survey - In this report, well monitoring conducted by an agency or private firm for a specified length of time in a designated area.

Township - A public land surveying unit that is a square parcel of land, six miles on each side. The location of a township is established as being so many six-mile units east or west of a north-south line running through an initial point (called the "principal meridian") and so many six-mile units north or south of an east-west line running through another point (called the "baseline"). (See “well numbering system.”)

Triazine - A chemical compound derived from any of three isomeric compounds, each having three carbon and three nitrogen atoms in a six-member ring. Triazine herbicides are strong inhibitors of photosynthesis. Atrazine and simazine are triazine herbicides.

Verified detection - confirmed and unconfirmed detections are verified if they meet the criteria specified in (FAC section 13149[d]) which requires that either the analytical method provides unequivocal identification of a chemical and is approved by DPR or that the detection is verified within 30 days by a second analytical method or a second analytical laboratory approved by DPR. Criteria have been set by DPR (Biermann, 1989, 1996) for determining if the detection of a pesticide or its breakdown product(s) meets the standards of section 13149[d].

Water quality limits –(See the reference Marshack, Jon B., 2003).

Water solubility - The ability of a substance to go into solution with water.

Well inventory database- a statewide database, required by the PCPA, of wells sampled for pesticide active ingredients.

Well numbering system - The California well numbering system is based on a rectangular system commonly referred to as the Public Lands Survey. Under this system, all tracts of lands are tied to an initial point and identified as being in a township. A township is a square parcel of land six miles on each side. Its location is established as being so many six-mile units east or west of a north-south line running through the initial point (called the “principal meridian") and so many six-mile units north or south of an east-west line running through the point (called the "baseline”). The meridian lines parallel to, and east or west of, the principal meridian are called

range lines. Every township is further divided into 36 parts called sections. A section is also described as a square parcel of land one mile on a side, each containing 640 acres. Each well in California is assigned a unique number (referred to as the State Well Number) by the Department of Water Resources (DWR). For well numbering purposes, each section of land is divided into sixteen 40-acre tracts. Once the well location is established in the 40-acre tract, it is assigned a sequence number, which is assigned in chronological order by DWR personnel. The DWR maintains an index of state well numbers to prevent duplication.