SAMPLING FOR PESTICIDE RESIDUES IN CALIFORNIA WELL WATER

2008 Update of the Well Inventory Database

For Sampling Results Reported From January 2007 through June 2008

Twenty-third Annual Report

Pursuant to the
Pesticide Contamination Prevention Act

California Environmental Protection Agency
DEPARTMENT OF PESTICIDE REGULATION

August, 2009

California Department of Pesticide Regulation

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California Environmental Protection Agency

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California Environmental Protection Agency
California Department of Pesticide Regulation
Environmental Monitoring Branch
Ground Water Protection Program
1001 I Street, Sacramento, California 95814

EXECUTIVE SUMMARY

This report summarizes the reported results of wells sampled for pesticides from January 2007 through June 2008, (2) analyzes those results to determine the probable source of the residues, and (3) describes the actions taken to prevent migration of pesticides to ground water by the Department of Pesticide Regulation (DPR) for nonpoint agricultural sources of pesticides and by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) for point sources of pesticides.

BACKGROUND

The purpose of the Pesticide Contamination Prevention Act of 1985, as amended (Food and Agricultural Code [FAC] sections 13141-13152), is to prevent further pollution of ground water aquifers which may be used for drinking water supplies in California. Among other provisions, this law requires:

- DPR to identify pesticides with the potential to pollute ground water and monitor for those pesticides to determine if they have migrated to ground water.
- DPR to verify reported detections of pesticide in ground water and determine whether those detections were the result of agricultural use of the pesticide.
- State and local agencies to submit all results of well monitoring to DPR.
- DPR to maintain a statewide data base of wells sampled for pesticide active ingredients (A.I.s)
- DPR to post on its Web site annually (1) the number of wells sampled for pesticides, (2) the number of wells with reported detections of pesticides, (3) the location of the wells, (4) the agencies responsible for drawing and analyzing the samples, (5) an analysis to determine the probable source of the detections, and (6) actions taken by the DPR Director and SWRCB to prevent pesticides from migrating to groundwaters of the state.

This is the 23rd annual report of this information.

RESULTS OF WELL SAMPLING FOR PESTICIDES AND SOURCES OF DETECTED RESIDUES

From January 2007 through June 2008, 511 wells, out of 3576 wells tested, were reported to contain one or more of 23 pesticides A.I.s and/or degradates. The positive wells were located in one or more of 27 counties out of 56 counties sampled. These results were reported by the California Department of Public Health (CDPH) and DPR.

Table i summarizes the current and historic reported well sampling data. The status of the 23 pesticides reported detected in this year's report is as follows:

- 8 of the 23 pesticide chemicals detected are no longer contained in products registered for use in California. These are 1,2-dibromo-3-chloropropane (DBCP), 1,2-dichloropropane (1,2-D), benzene, chloromethane (methyl chloride), ethylene dibromide (EDB), naphthalene, trichlorobenzene, and xylene.

Table 1. Summary, by agency, of well sampling data collected in 2007 and 2008.

Category	*Reporting Period and Agency*			
	2007/2008			*1985-2008*
	Total	*CDPH*	*CDPR*	*All Reporting Agencies*
Counties Sampled	56	56	21	58
Counties with Detections	27	24	15	50
Wells Sampled	3,576	3,208	387	22,862
Wells with Detections	511	311	200	5,198
Pesticides and/or Degradates Sampled	130	117	21	341
Pesticides and/or Degradates Detected	23	12	12	112

- Detections of diquat dibromide and methyl bromide are subject to follow-up monitoring by the reporting agencies to confirm the detections.
- The degradation product of chlorthal dimethyl has been determined not to pose a threat to public health so no further action will be taken.
- The sources of two pesticides–hexazinone and tebuthiuron–are still under investigation.
- The remaining ten pesticide A.I.s and degradates are currently regulated by DPR as ground water contaminants. Table ii lists these 10 chemicals in the order of the number of wells with detections, and includes the range of concentrations, and any health levels.

Table 2. Reports of pesticide currently regulated to protect ground water.

Pesticide Detected	*Number of Wells with Detections*	*Range of Concentrations (ppb)*	*Maximum Contaminant Level (ppb)*
Diamino-chlorotriazine (degradate of atrazine or simazine)	144	0.05 – 7.158	None established (NE)
Deethyl-simazine or deisopropyl atrazine (degradate of atrazine or simazine)	132	0.05 – 1.79	NE
Simazine	104	0.05 – 0.68	4
Diuron	72	0.05 – 1.084	NE
Desmethyl-norflurazon (degradate of norflurazon)	59	0.054 – 1.86	NE
Norflurazon	38	0.05 – 2.48	NE
Bromacil	32	0.05 – 5.2	NE
Deethyl-atrazine (degradate of atrazine)	21	0.05 – 0.429	NE
Atrazine	19	0.05 - 0.6	1
Prometon	2	0.062 – 0.067	NE

ACTIONS TAKEN TO PREVENT MIGRATION OF PESTICIDES TO GROUND WATER

Department of Pesticide Regulation

I. Protecting Vulnerable Areas from Pesticide Contamination

Regulation of Ground Water Contaminants

DPR continues to regulate the seven pesticides that have been found in ground water due to agricultural use–atrazine, simazine, bromacil, diuron, promotion, bentazon, and norflurazon–by requiring permits and specified mitigation measures for use in sensitive areas (called ground water protection areas [GWPAs]). These GWPAs are classified as either leaching or runoff depending on the pathway of pesticide movement to ground water. There are 1673 sections of land (1.1 million acres) identified as leaching GWPAs, where the mitigation measures are designed to prevent overirrigation, 2015 sections of land (1.3 million acres) identified as runoff GWPAs, where the mitigation measures are designed to either prevent offsite movement of contaminated runoff or manage contaminated runoff so that it does not move to ground water. Fifty four sections of land (35,000 acres) were identified as partial leaching and partial runoff GWPAs.

Effectiveness of Mitigation Measures

To assess the effectiveness of mitigation measures to protect ground water, DPR established a well network in 1999 to monitor pesticide levels over time. A preliminary analysis indicates a decrease in concentrations of simazine, bromacil and diuron, which have been regulated since the early 1990's, and an increase in concentrations of norflurazon, which was not regulated until the late 1990's. This is consistent with a previous age-dating study that showed that the median time for a pesticide to move from the soil surface to well water was seven to nine years, indicating that there would be an expected lag time between adoption of regulations and changes in pesticide concentrations in ground water. A complete analysis of changes in the pesticide concentrations in these wells since 1999 will be published in 2009.

Identification of Additional Vulnerable Areas

To determine if there are additional vulnerable areas not currently identified as GWPAs, DPR sampled 176 wells outside of GWPAs in 11 counties and found pesticides currently regulated to protect ground water in 68 wells in 8 counties. Those results are being analyzed to determine how many additional sections should be identified as GWPAs.

Development of Mitigation Measures to Protect Ground Water

As part of a continuing effort to study additional mitigation measures to protect ground water, DPR is collecting information about chemigation of pesticides via a low-volume micro-sprinkler irrigation system. Low-volume irrigation systems apply irrigation water more efficiently, which reduces overirrigation and leaching of pesticides to ground water. The results of this study should be available in 2010.

II. Assessing, Identifying, and Monitoring Potential Pesticide Contaminants

Assessing the Ground Water Contamination Potential of New Pesticides Proposed for Registration and Use in California

DPR reviews new pesticide A.I.s and new uses of old A.I.s to determine their potential for movement to ground water. Pesticides that meet initial screening criteria are further assessed using field dissipation data and physical-chemical characteristics in a computer model These data along with other physical-chemical properties of pesticides are used in computer models to estimate each pesticide's potential to contaminate ground water in vulnerable California soils. If it appears that a new pesticide is likely to be detected in ground water following normal application and irrigation practices, DPR will ask the registrant to collect additional field data to determine if the contamination potential can be mitigated. If so, DPR may recommend pesticide label amendments that would reduce the perceived threat to ground water before approving the pesticide for use in California. A perceived continued threat to California ground water would most likely result in a recommendation for denial of California registration.

Assessing the Ground Water Contamination Potential of Agricultural Fumigants

DPR determined that the post-application irrigation treatments to reduce volatilization of four registered fumigants–methyl bromide, chloropicrin, methyl isothiocyanate (MITC), and 1,3-dichloropropene (1,3-D)–and three proposed fumigants–iodomethane, dimethyl disulfide (DMDS), and furfural–as sources of volatile organic compounds, would not result in contamination of ground water.

Collecting and Maintaining Environmental Fate Data on Agricultural Pesticides

DPR updated the Pesticide Chemistry Database, which contains the physical and chemical properties of agricultural pesticide A.I.s from environmental fate studies conducted by registrants in compliance with the requirements of California's pesticide registration process. This database is used to help identify pesticides with the potential to pollute ground water.

Updating the Ground Water Protection List–Title 3, California Code of Regulations (3CCR) section 6800(b)

DPR proposed adding 40 pesticide A.I.s to, and removing one pesticide from, the list of pesticides with the potential to pollute ground water. Pesticides are listed if they exceed the specific numerical values specified in 3CCR section 6804, and are applied to soil or followed by irrigation as specified in FAC section 13145. DPR is required to monitor to determine if these pesticides have migrated to ground water. The proposed additions are azoxystrobin; bensulfuron methyl; bispyribac-sodium; clomazone; 2,4-D, 2-ethylhexyl ester; 2,4-D, diethanolamine salt; 2,4-D, isooctyl ester; 2,4-DP-P, dimethylamine salt (dichlorprop-P, dimethylamine salt); dicamba, diglycolamine salt; dicamba, dimethylamine salt; dicamba, sodium salt; diflufenzopyr, sodium salt; dimethenamid-P; dinotefuran; dithiopyr; endothall, dipotassium salt; endothall, mono (N,N-dimethyl alkylamine) salt; fenoxycarb; fludioxonil; flutolanil; halosulfuron-methyl; imazamox, ammonium salt; imazapic, ammonium salt; imazethapyr, ammonium salt; malathion; mefenoxam; methyl parathion; (S)-metolachlor; penoxsulam; piperonyl butoxide; propanil; siduron; terrazole; thiamethoxam; thiazopyr; thiobencarb; thiophanate methyl; triclopyr,

butoxyethyl ester; triclopyr, triethylamine salt; and uniconizole-P. DPR proposed removing acrolein from the list.

Prioritizing Pesticides Listed in 3CCR section 6800(b) For Monitoring

DPR is developing a method to rank the pesticides listed in 3CCR section 6800(b) based on a comparison of their relative risks. This ranking will allow DPR to direct limited resources to monitoring for the pesticides that pose the greatest risk to ground water. Based on the first iteration of this ranking, DPR selected iprodione, azoxystrobin, dichloran, and ethofumesate for analytical method development and imidacloprid and S-metolachlor for the 2009 GWPL monitoring study.

Monitoring for Potential Pesticide Contaminants

DPR sampled 74 wells in nine counties for two preemergent herbicides listed in 3CCR section 6800(b), napropamide and oryzalin, during April and May 2007. No residues were detected. In 2008, DPR sampled 59 wells for tebuthiuron, another herbicide listed in 3CCR section 6800(b). Residues were found in four wells in San Diego, Los Angeles, and Solano counties. The source of the residues is under investigation and a final report will be completed in 2009.

III. Using Computer Simulated Modeling to Predict the Behavior of Pesticides in the Environment

Improving Contaminant Transport Modeling Tools

DPR uses the LEACHM pesticide fate and transport model to help evaluate the ground water contamination potential of pesticides proposed for California registration. The current modeling scenario assumes a constant residue dissipation rate with soil depth, but studies indicate that slower dissipation rates dominate as lower soil layers. In 2007 DPR initiated a study to provide estimates of depth-specific residue dissipation rates for two commonly used pesticides, simazine and diuron. This study will be completed in 2009.

State Water Resources Control Board

SWRCB staff participated in the following activities:

- Regularly attended meetings sponsored by DPR, including the interagency Pesticide Registration and Evaluation Committee and Pest Management Advisory Committee.

- Participated in ongoing consultations with DPR staff, University of California scientists, and pesticide manufacturers to design monitoring studies and Best Management Practices.

- Participated in discussions with U.S. Geological Survey (USGS) scientists on studies dealing with pesticides and water quality.

- Reviewed, on an ongoing basis, DPR Notices of "Materials Entering Evaluation" and advised DPR on potential water quality impacts of pesticide registration and use decisions.

- Reviewed and commented on DPR's proposed studies on pesticide and water quality pursuant to the Management Agency Agreement with DPR.

- In coordination with the USGS and Lawrence Livermore National Laboratory, the State Water Board is implementing the Groundwater Ambient Monitoring and Assessment Program (GAMA). The GAMA Program has sampled over 1,700 public water supply wells for various chemicals and contaminants, including pesticides, herbicides and their degradates. The water quality results for the Southern and Central Sierra, East-Central San Joaquin Valley, South Sacramento Valley and Kern Basins–GAMA Study Unit are summarized in this report.

The State Water Board sampled over 90 domestic wells in San Diego County for various chemicals and contaminants, including pesticides, herbicides and their degradates. The results are also summarized in this report.

Regional Water Quality Control Boards

This report also summarizes, by county, the monitoring, assessment, cleanup, and other actions taken by the nine RWQCBs to address point sources of contamination for numerous pesticides.

The information presented in this report that pertains to the actions taken by SWRCB and the nine RWQCBs to prevent pesticides from migrating to ground water, is also available at: <http://www.waterboards.ca.gov/gama/docs/ab2021_fy0708.pdf>.

PREFACE

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

This report presents data reported to or produced by DPR from January 1, 2007, through June 30, 2008.

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. DPR can provide additional location information (county, township, range, and section) upon request. If you require this information, please contact DPR's Ground Water Protection Program at 916-324-4039.

ACKNOWLEDGEMENTS

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

As required by the PCPA, this report discusses the source of active ingredients, contained in registered pesticide products, which have been found in ground water. DPR provides this information to satisfy legal mandates and inform the public. Any discussion of commercially available pesticide products, or the way they are applied, does not constitute an actual or implied endorsement of these products by DPR.

ABBREVIATIONS

1,2-D	1,2-dichloropropane (propylene dichloride)
3CCR	Title 3 of the California Code of Regulations
ACET	deethyl-simazine or deisopropyl-atrazine
A.I.(s)	active ingredient (s)
CAC	County Agricultural Commissioner
CALVUL	California Vulnerability Model
CDFA	California Department of Food and Agriculture
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	Ground Water 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
U.S. EPA	United States Environmental Protection Agency

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INTRODUCTION

California has regulated pesticides for a century. Its citizens–through their Legislature–have established a comprehensive body of law to control every aspect of pesticide sales and use, and to assure that the state's pesticide regulators also have the tools to assess the impacts of that use. The first pesticide-related law was passed in this state in 1901, and since the 1960s, a whole body of modern, increasingly science-based pesticide law and regulation has come into being.

The California Department of Pesticide Regulation (DPR) protects human health and the environment by regulating pesticide sales and use and by fostering reduced-risk pest management. DPR's oversight begins with product evaluation and registration, and continues through statewide licensing of commercial applicators, dealers and consultants; environmental monitoring; and residue testing of fresh produce. In 2008, DPR had an annual budget of approximately $70 million, with a staff of about 400, including scientists from many disciplines. Their work is augmented by approximately 400 biologists working for County Agricultural Commissioners in all 58 counties on local pesticide enforcement.

DPR began addressing pesticide contamination of ground water in the early 1980's after the discovery of contamination from the legal application of the fumigant dibromochloropropane (DBCP). Reports of additional pesticides in ground water resulted in the passage of the PCPA in 1985, which added FAC sections 13141-13152, DPR's Ground Water Protection Program is based on general authority in the FAC to protect the environment from harmful pesticides, and specific authority in the PCPA that establishes a process to prevent further pollution of ground water used for drinking water supplies by agricultural pesticides. "Pollution" is defined in FAC section 13142 (j) as "the introduction into the groundwaters of the state of an A.I., other specified product, or degradation product of an active ingredient of a pesticide above a level, with an adequate margin of safety, that does not cause adverse health effects." The Ground Water Protection Program focuses on:

- Developing reduced-risk practices for pesticides identified as having moved through soil to ground water.
- Evaluating new pesticide use practices and irrigation methods that substantially reduce the downward movement of pesticides away from the application site.
- Improving contaminant transport modeling tools that are essential in determining if new pesticides proposed for use in California could threaten ground water.
- Outreach through training programs for pesticide users.
- Implementation of the PCPA.

Pesticides found in ground water or soil due to nonagricultural use, such as residential uses in urban areas, and that have been determined to present a hazard or potential adverse effect, will be considered for review as part of DPR's pesticide registration reevaluation process.[1]

[1] Excerpted from "*Regulating Pesticides*: The California Story, a Guide to Pesticide Regulation in California (2001)" <*http://www.cdpr.ca.gov/dprabout.htm*>.

The PCPA requires DPR to do the following:

- Require pesticide registrants to submit environmental fate data for agricultural use pesticides.[2]
- Use that data to identify pesticides with the potential to pollute ground water.
- Conduct well sampling to determine if potential leachers have moved to ground water.
- Examine the use of pesticides found in ground water due to legal (i.e., applications according to the label) agricultural use to determine if continued use should be allowed.
- Establish a database of well sampling results that must be reported to DPR by all local, county, and State agencies monitoring for pesticides in ground water.
- Prepare an annual report that summarizes the reported monitoring results, analyzes those results to determine the probable source of the residues, and specifies the actions taken by DPR for nonpoint sources and by the SWRCB for point sources to prevent further contamination of ground water.

This report satisfies the requirements of FAC section 13152 (e) and describes, in detail, state agency ground water sampling results and the actions taken by DPR and the SWRCB to prevent pesticides from migrating to the ground waters of the state.

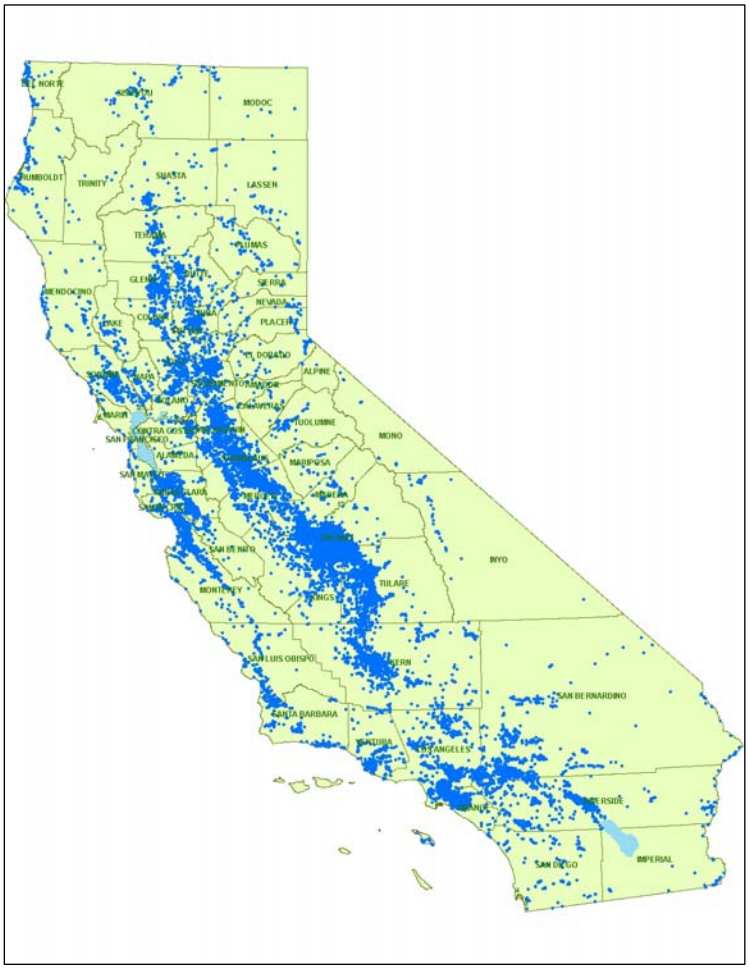
[2] California's definition of "agricultural use" is broad, and includes not only pesticide use in production agriculture, but also on turf (e.g., golf courses, cemeteries) and along rights-of-way.

COLLECTING GROUND WATER SAMPLING DATA

WELL INVENTORY DATABASE

DPR maintains a database of ground water sampling results collected by other public agencies and through DPR's Ground Water Protection Program. DPR staff and stakeholders use these data to map the geographic distribution of current and historical pesticide detections, to identify areas vulnerable to contamination by agricultural pesticide use, and to design future ground water monitoring studies.

Figure 1. Wells sampled by DPR since the early 1980s.



DPR began collecting ground water monitoring data in the early 1980s. Currently, the Well Inventory Database contains over 1.8 million pesticide sample analyses submitted by 45 agencies (Appendix A). These data include more than 22,000 public and private wells that have been sampled for over 340 different pesticide A.I.s or degradation products. Although there are a large number of contributors, the majority of the data comes from DPR (4 percent [%]) and the CDPH (93%). By 2009, DPR anticipates that the SWRCB's GAMA Program will become a significant data contributor.

The Well Inventory Database includes the following information:

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

Data included in the 2008 report are based on the year the data were submitted to DPR, not the date the samples were collected. In this report, data for DPR represent samples collected from

January 2007 through June 2008. The CDPH samples were collected from January through December 2007.

PRINCIPAL REPORTING AGENCIES

The ground water monitoring data collected and maintained by DPR is very comprehensive; however, it does not provide a systematic assessment of ground water quality throughout California. The regulatory responsibilities unique to each reporting agency determine sampling frequency, location, and well type. These differences also greatly influence the chemicals monitored and the sensitivity of the analytical methods used.

Department of Pesticide Regulation

DPR protects human health and the environment by regulating pesticide sales and use and by fostering reduced-risk pest management. DPR's strict oversight begins with product evaluation and registration, and continues through statewide licensing of commercial applicators, dealers and consultants, environmental monitoring, and residue testing of fresh produce. Before a pesticide may be used in California, the registrant must submit data on the product's toxicology and chemistry; its environmental fate; its effectiveness against targeted pests; its hazards to nontarget organisms, fish and wildlife; and the degree of worker exposure. DPR evaluates these data thoroughly to ensure that the pesticide will not harm human health or the environment. If the data indicate potential serious, uncontrollable adverse environmental or human health effects, DPR's Director may deny the registration request or cancel current product registrations.

DPR uses monitoring data to better understand the behavior of pesticides in soil, air, and water and assess the impact of pesticide use on the environment. To ensure consistent and reliable sampling results, DPR funds the Department of Food and Agriculture's Center for Analytical Chemistry to develop analytical methods and conduct sample analyses. Following reports of pesticide detections from other agencies, DPR conducts additional sampling to confirm the detections, characterize the nature and extent of the potential contamination, and, if necessary, determine how to prevent or mitigate the off-site movement of pesticides.

DPR's Ground Water Protection Program focuses on early detection of potential pesticide contaminants and on developing reduced-risk practices for pesticides that have been found in ground water due to legal agricultural use. Pesticides found in ground water or soil due to nonagricultural use, such as residential uses in urban areas, and that have been determined to present a hazard or potential adverse effect, will be reviewed as part of DPR's formal pesticide registration reevaluation process.

For more information about pesticide regulation in California, please visit DPR's Web site at: <www.cdpr.ca.gov>.

California Department of Public Health

CDPH is responsible for the enforcement of the federal and California Safe Drinking Water Acts and the regulatory oversight of ~7, 500 public water systems to assure the delivery of safe drinking water to all Californians. In this capacity, CDPH staffs perform field inspections, issue operating permits, review plans and specifications for new facilities, take enforcement actions for non-compliance with laws and regulations, review water quality monitoring results, and support and promote water system security. In addition, CDPH staff are involved in funding infrastructure improvements, conducting source water assessments, evaluating projects utilizing recycled treated wastewater, and promoting and assisting public water systems in drought preparation and water conservation.

CDPH establishes health protective drinking water standards that must be met by public water systems. These standards, known as maximum contaminant levels (MCL), take into account not only chemicals' health risks but also factors such as their detectability and treatability, as well as costs of treatment. CDPH establishes a contaminant's MCL at a level as close to its public health goal (PHG) as is technically and economically feasible, placing primary emphasis on the protection of public health (see the MCL process). CDPH uses health-based advisory levels called notification levels for certain chemicals without MCLs. Along with the MCL, a regulated chemical also has a detection limit for purposes of reporting the level at which CDPH is confident about quantification being reported.

Under CDPH oversight, public water systems monitor drinking water for regulated contaminants. These systems may also monitor for emerging contaminants and chemicals identified through the U.S. Environmental Protection Agency's (EPA's) Unregulated Contaminant Monitoring Program. As required by law, they assure compliance with mandated drinking water standards and provide annual monitoring reports to their customers. CDPH compiles and evaluates drinking water quality data collected by public water systems and provides results for pesticide monitoring to DPR for inclusion in this report.

For more information about drinking water safety and regulation in California, go to the CDPH Web site at <www.cdph.ca.gov>, click on the "Programs" tab at the top of the page and follow the links to the Division of Drinking Water and Environmental Management Home Page.

State Water Resources Control Board–Groundwater Ambient Monitoring and Assessment Program

The SWRCB expanded the GAMA Program following implementation of the Groundwater Quality Monitoring Act of 2001 (sections 10780-10782.3 of the Water Code–AB 599). Water Code AB 599 resulted in a publicly accepted plan to monitor and assess basins that account for over 90% of groundwater use. The plan identified these "priority basins" based on groundwater used statewide. The main objectives of the GAMA Program are to improve statewide ambient groundwater quality monitoring and assessment and to increase the availability of information about groundwater quality to the public. The GAMA Program has the three current projects:

- The GAMA Priority Basin Project monitors for dozens of chemicals at very low detection limits, including emerging contaminants. Monitoring and assessments for priority basins are to be completed every ten years, with trend monitoring every three years. The SWRCB is collaborating with the U.S. Geological Survey (technical project lead) and Lawrence Livermore National Laboratory (LLNL) to implement the GAMA Priority Basin Project.

- The GAMA Program also assesses the quality of domestic well water through its Domestic Well Project. The GAMA Domestic Well Project has sampled in several county-focus areas in coordination with local environmental health departments. The SWRCB incurs the costs of sampling and analysis. The GAMA Domestic Well Project also provides an education component to help domestic well users to better understand water quality issues.

- The GAMA Special Studies Project partners with LLNL to conduct several groundwater studies including nitrate, wastewater, and groundwater recharge. LLNL scientists apply Tritium-Helium age dating technique, isotopic composition of water and nitrogen molecules to determine source(s), and presence of noble gases to determine recharge source and condition, as well as sophisticated computer modeling techniques.

DPR and the SWRCB's GAMA Program are working collaboratively to improve our ability to share groundwater-monitoring data collected by our respective programs. DPR received Priority Basin Project data from SWRCB in 2008; however, significant differences between the data systems have delayed the reporting of this information. DPR anticipates being able to report data from the GAMA Program in the 2009 Well Inventory Report.

For more information about the SWRCB's GAMA Program, go to <www.swrcb.ca.gov> and select "More" from the links at the top of the page, then follow the "Groundwater" link to the GAMA Program Home Page.

SAMPLING GROUND WATER FOR PESTICIDES

This section describes DPR's Ground Water Protection Program and our response to detections reported by other state and local agencies. It also summarizes ground water sampling results submitted by CDPH and produced through DPR's regulatory monitoring activities.

GROUND WATER MONITORING REQUIREMENTS

The PCPA requires DPR to take steps to prevent or mitigate ground water contamination from the agricultural use of pesticides. DPR must base these regulatory actions on appropriately designed monitoring surveys and highly reliable analytical results.

Per the PCPA, DPR monitors for ground water contamination in areas where applicators use large amounts of persistent and mobile agricultural pesticides that are intentionally applied to soil or where typical pesticide use practices or product chemistries of these pesticides create an opportunity for potential pollution. The law specifies that the sampling results must be obtained from an approved analytical method that provides unequivocal identification of a pesticide, such as mass spectroscopy, or from verification, within 30 days, by a second analytical method or a second analytical laboratory also approved by DPR. If an approved laboratory confirms the presence of a pesticide in a ground water sample using an approved analytical method, DPR must determine whether the agricultural use of that pesticide caused the detection. State law authorizes DPR to regulate the sales and use of legally registered pesticides that pollute or threaten to pollute ground water. Since state law does not authorize DPR to regulate pesticide manufacturing, accidental spills, illegal disposal, or other point sources of detection or to address the detection of unregistered or banned pesticides in ground water, ground water contamination caused by these sources is referred to the SWRCB, the state lead agency for water quality protection, for further investigation.

RESPONDING TO REPORTED PESTICIDE DETECTIONS

DPR uses a wide range of information, including the data reported by other public agencies, to identify and monitor areas that may be vulnerable to pesticide contamination. With few exceptions, DPR samples all wells with reported pesticide detections regardless of the analytical methods or laboratories used by the reporting agencies. We do this because the PCPA requires DPR to base its regulatory actions on sampling results obtained from DPR-approved analytical methods and laboratories.[3] DPR rarely limits sampling to the reported pesticide: we test wells with suspected pesticide contamination for a broad range of known and suspected pesticide contaminants using sensitive analytical methods that allow us to detect amounts as low as 0.05 ppb.

Before sampling wells with reported detections, DPR establishes the accuracy of the reports by reviewing them with the well owners and CDPH. DPR also closely reviews analytical laboratory procedures following reports of contamination by pesticides that appear highly unlikely to contaminate ground water due to their chemical characteristics or the way they are applied Evaluating the laboratory's analytical methods and the quality assurance and quality control data

[3] The California Department of Food and Agriculture's Center for Analytical Chemistry provides approved analytical services for DPR's environmental monitoring programs.

allows DPR to assess the reliability of the reported sample results. If we determine that the data were reported in error or may be invalid due to unacceptable analytical variability, DPR will not sample the well.

Although DPR is mandated to monitor ground water for the presence of pesticides and it is our policy to sample wells with reported pesticide detections, DPR does not have the legal authority to require well owners to participate. Since participation is voluntary, DPR works cooperatively with the well owners and the CDPH field offices to obtain samples from the wells with reported pesticides detections. Occasionally, we cannot sample the original well because it was destroyed or the well owner declined our request to sample the well. If the original well is not available but the detection is valid and the pesticide is or could have been used nearby, DPR will sample other wells in the areas around the original well. Sampling is sometimes delayed to allow for well repairs or the development of an adequate analytical method. DPR will not conduct additional sampling under certain circumstances, such as:

- DPR and the County Agricultural Commissioners already regulate the detected pesticide as a ground water contaminant and require pesticide users in the area where the pesticide was detected to follow strict application practices designed to reduce environmental harm.

- The detected pesticide is no longer registered for sales and use in California or DPR had banned it from use statewide.[4]

- The analytical laboratory reported finding pesticide residues at levels far below that which we can reliably test for at this time.

- The reporting agency performed additional tests on the well and did not detect any pesticides.

[4] For example, to satisfy state and federal drinking water standards, CDPH tests for and continues to find pesticides that were banned many years ago but still pose a hazard to the people who may drink the water. Since these pesticides are no longer registered or allowed to be used in California, DPR has no regulatory authority to mitigate these past problems.

GROUND WATER SAMPLING RESULTS

Overview

The ground water monitoring data included in this report were collected by CDPH in 2007 and by DPR from January 2007 through June 2008. In total, over 3,500 wells in 56 counties were sampled for one or more of 130 pesticides or pesticide degradation products. The reporting agencies sampled over 3,200 public water system wells and over 300 privately owned wells. Public and private drinking water wells accounted for 99% percent of the wells sampled with the remaining 1% comprised of agricultural irrigation wells. CDPH and DPR detected 23 pesticides or pesticide degradation products in over 500 drinking water wells (Table 1 and Appendix B).

Table 3. Summary, by agency, of well sampling data collected in 2007 and 2008.

Category	*Reporting Period and Agency*			
	2007/2008			*1985-2008*
	Total	*CDPH*	*CDPR*	*All Reporting Agencies*[5]
Counties Sampled	56	56	21	58
Counties with Detections	27	24	15	50
Wells Sampled[6]	3,576	3,208	387	22,862
Wells with Detections	511	311	200	5,198
Pesticides and/or Degradates Sampled[7]	130	117	21	341
Pesticides and/or Degradates Detected	23	12	12	112

Sampling Results Summarized by Pesticide

California Department of Public Health

In 2007, CDPH reported that California's drinking water purveyors sampled for 117 pesticides and pesticide degradation products in over 3,200 drinking water supply wells (Table 1 and Appendix B). Of the 12 pesticides and degradation products detected, only diquat dibromide, methyl bromide, tebuthiuron, and chlorthal-dimethyl acid degradation products are contained in or could have originated from products currently registered for use as pesticides in California (Table 2 and Appendix B). DBCP, 1,2-D, EDB, and naphthalene were used as pesticides many

[5] See Appendix A for a list of the local, state and federal agencies that have contributed well monitoring data to DPR since the early 1980's.

[6] For the purpose of this report, the table columns "Wells Sampled" and "Wells with Detections" present the total number of individual wells sampled or found to contain pesticide residues regardless of the number of sampling events or detections that occurred during the reporting period.

[7] For the purpose of this report, the table columns "Pesticides Sampled" and "Pesticides Detected" present the total number of individual pesticides or degradation products sampled or found in ground water regardless of the number of sampling events or detections that occurred during the reporting period.

years ago but are prohibited in California due to concern for their effect on human health and/or ground water contamination. Benzene, trichlorobenzene, and xylene were used in pesticide formulations as carriers for the A.I. but this use has steeply declined. These chemicals are mainly used in industrial processing and manufacturing. Chloromethane has never been registered for use as a pesticide or used as an inert ingredient in a pesticide formulation in California and will be eliminated from future reports.

A number of detections of DBCP, benzene, and EDB exceeded their respective MCLs established by CDPH. 1,2-D exceeded the PHG, an advisory level set by the Office of Environmental Health Hazard Assessment (Table 2 and Appendix C). DBCP, EDB and 1,2-D contaminated ground water as a result of agricultural applications that occurred prior to 1982. These chemicals are very persistent in ground water and remain as a ground water problem for many communities in California.

DPR reviewed the detection reports for diquat dibromide (two wells), methyl bromide (five wells), and tebuthiuron (two wells) with CDPH, the water system managers, and, in the case of methyl bromide, with the analytical laboratory. We determined that the diquat dibromide and methyl bromide detection reports were valid but the tebuthiuron detection reports may contain significant errors.

- DPR will defer follow-up sampling for methyl bromide and diquat dibromide until the results of additional sampling by the water systems becomes available:

    - In 2007, four water systems resampled wells with methyl bromide (three wells) or diquat dibromide (one well) and detected no residues of either pesticide.
    - In 2009, at the request of CDPH, two water systems resampled their wells for methyl bromide and will report the results to CDPH and DPR when they become available.
    - In 2009, CDPH requested a water system to resample for diquat dibromide, however; the water system declined due to budgetary concerns but indicated that they will sample for this pesticide in 2010, according to their required monitoring schedule.

- DPR will not sample for tebuthiuron at until we confirm the validity of the reports. Coincidentally, in 2008, DPR initiated a field monitoring survey for tebuthiuron and several of its degradation products after learning that SWRCB's GAMA program had detected this pesticide in several wells in California.[8]

- DPR will not conduct follow-up sampling for chlorthal-dimethyl acid degradation products because the detected amount does not exceed a level determined to pose a threat to public health.

[8] See the following section, "Actions Taken to Prevent Ground Water Contamination", for more information about this study.

Table 4. Pesticides detected in public supply wells by CDPH in 2007 and DPR's response to these detections.

Pesticide	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
1,2-dibromo-3-chloropropane (DBCP)	261[9]	0.01 – 1.80	DBCP, an agricultural fumigant, was banned in the U.S. by the early 1980s due to human toxicity concerns and widespread ground water detections. DPR does not respond to reported detections because DBCP is no longer regulated as a pesticide, CDPH regulates DBCP as a drinking water contaminant[10]. DBCP was detected in amounts that exceeded the MCL (0.2 ppb) in 89 wells. The PHG (0.0017 ppb) for DBCP was exceeded in all 261 wells.
1,2-dichloropropane (1,2-D)	3	0.63 – 3.4	1,2-D was used as an agricultural fumigant until the late 1970s and is currently used in industrial manufacturing. DPR does not respond to reported detections because 1,2-D is no longer regulated as a pesticide. CDPH regulates 1,2-D as a drinking water contaminant. None of the 1,2-D detections exceeded the MCL (5 ppb), however; the PHG (0.5 ppb) for 1, 2-D was exceeded in all three wells.
Benzene	6	0.62 – 110	Benzene is a component of gasoline and is widely used in industrial manufacturing. Pesticide formulations often included benzene as an inert ingredient (or carrier) but this use has steeply declined. Benzene has never been registered for use as a pesticide A.I. in California. DPR does not respond to reported detections of benzene because it is not regulated as a pesticide. CDPH regulates benzene as a drinking water contaminant. Benzene was detected in amounts that exceeded the MCL (1 ppb) in five wells. The PHG (0.15 ppb) for benzene was exceeded in four wells.

[9] Some of the wells listed in this table were sampled more than once during the reporting period. For the purposes of this table, a well where pesticides were detected is only counted once regardless of the number of samples taken. However, the range in amounts detected reflects all positive samples take during the reporting period.

[10] See Appendix B for more information about mandatory water quality standards established by CDPH and suggested limits established by the U. S. EPA.

Table 4. Pesticides detected in public supply wells by CDPH in 2007 and DPR's response to these detections, con't.

Pesticide	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Chloromethane (methyl chloride)	24	0.5 – 4.61	Chloromethane has many industrial uses but has never been registered as a pesticide active ingredient in California. DPR does not respond to reported detections of chloromethane because it is not regulated as a pesticide. Although there is no MCL or PHG for chloromethane, some water systems monitor for it as part of the U.S. EPA's Unregulated Contaminant Monitoring Program.
Chlorthal-dimethyl acid degradation products	1	22 - 30	Chlorthal-dimethyl acid is a degradation product of dacthal, a registered agricultural herbicide. DPR responds to detections of pesticide degradation products when the detected amount exceeds a level determined to pose a threat to public health. Since DPR has determined that it does not pose a threat to public health, DPR did not respond to this detection. Although there is no MCL or PHG for this pesticide degradation product, some water systems monitor for it under the U.S. EPA's Unregulated Contaminant Monitoring Program.
Diquat Dibromide	2	0.67 – 0.77	Diquat dibromide is registered as an agricultural herbicide. One water system resampled their well during the reporting period and detected no diquat dibromide residues. The second water system, citing budgetary constraints, declined a CDPH request to resample for diquat dibromide in advance of their required monitoring that will be conducted in 2010. DPR will delay monitoring until the results from the 2010 monitoring are available because diquat never been detected in these wells during prior sampling events, it binds permanently to the soil and is not expected to migrate to ground water and there was very little use in the vicinity of the wells. CDPH regulates diquat dibromide as a drinking water contaminant. None of the diquat dibromide detections exceeded the MCL of 20 ppb or the PHG of 15 ppb.

Table 4. Pesticides detected in public supply wells by CDPH in 2007 and DPR's response to these detections, con't.

Pesticide	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Ethylene dibromide (EDB)	15	0.01 – 0.47	EDB, an agricultural fumigant, was banned in the United States by the early 1980s. DPR does not respond to reported detections because it is no longer regulated as a pesticide. CDPH regulates EDB as a drinking water contaminant. EDB was detected in amounts that exceeded the MCL (0.05 ppb) in seven wells. The PHG (0.01 ppb) for EDB was exceeded in all 15 wells.
Methyl bromide (bromomethane)	5	0.59 – 4.6	Methyl bromide is registered for use as an agricultural fumigant. During the reporting period, five water systems reported methyl bromide detections. Three water systems sampled their wells during 2007 and detected no residues in the follow up samples. At CDPH's request, the remaining two water systems sampled their wells in early 2009 and are waiting for the analytical results. DPR will delay monitoring until the results from the next sampling events are available because methyl bromide has never been detected in these wells during prior sampling events, it is highly volatile and is not expected to migrate to ground water, and there was very little use in the vicinity of the wells. Although there is no MCL or PHG for methyl bromide, some water systems monitor for it as part of the U.S. EPA's Unregulated Contaminant Monitoring Program.
Naphthalene	1	1.04	Naphthalene is used in industrial processing and manufacturing as a chemical precursor, plasticizer, dispersant and surfactant. It was used in California as an insect repellent until the early 1990s when all product registrations were cancelled. DPR does not respond to reported detections because it is no longer regulated as a pesticide. CDPH has not established or adopted an MCL or PHG for naphthalene. CDPH established a Notification Level for naphthalene of 170 ppb. The single naphthalene detection did not exceed this level.

Table 4. Pesticides detected in public supply wells by CDPH in 2007 and DPR's response to these detections, con't.

Pesticide	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Tebuthiuron	2	19 - 27	Tebuthiuron is registered as an herbicide for use in non-cropped areas. Preliminary information provided by the water purveyor indicates that the reported results may be incorrect. DPR will not sample for tebuthiuron in these public supply wells until we are able to confirm the validity of the reports. DPR is currently monitoring for tebuthiuron in domestic and irrigation wells.[11] CDPH has not established or adopted an MCL, PHG, or Notification Level for tebuthiuron.
Trichlorobenzene	1	0.58	Trichlorobenzene is used as a solvent or a dye carrier. It is also used to make herbicides and other organic chemicals and a component in wood preservatives and abrasives. It was once used as a soil treatment for termite control in the United States but has never been registered as a pesticide in California. DPR does not respond to reported detections of trichlorobenzene because it is not regulated as a pesticide. CDPH has not established or adopted an MCL, PHG, or Notification Level for trichlorobenzene.
Xylene	4	0.5 – 436.6	Xylene is a natural component of gasoline and is widely used in industrial manufacturing. It is no longer used as a pesticide but is included in some products as an inert ingredient. DPR no longer responds to xylene detections due to steep declines in its use in pesticide production and difficulty in source identification due to the prevalence of leaking underground gasoline tanks. CDPH regulates this chemical as a drinking water contaminant. No xylene detections exceeded the MCL of 1,750 ppb or the PHG of 1,800 ppb.

[11] See the following section, "Actions Taken to Prevent Ground Water Contamination", for more information about this study.

Department of Pesticide Regulation

From January 2007 through June 2008, DPR monitored 387 wells for 21 pesticides and pesticide degradation products as part of the following studies:[12]

- Protocol for Monitoring the Concentration of Detected Pesticides in Wells Located in Highly Sensitive Areas (Garretson, 1999).
- Protocol for Monitoring Ground Water in Sections with Reported Detections Outside Existing Ground Water Protection Areas (Nordmark et al, 2007).
- Protocol for Conducting Ground Water Protection List Monitoring For Fiscal Year 2006/07 - Napropamide and Oryzalin (Fossen, 2007).
- Protocol for Conducting Ground Water Protection List Monitoring for Tebuthiuron for Fiscal Year 2007–2008 (Dias, 2008).
- Four-Section Surveys seeking to confirm the reported detections of alachlor (Z572) and hexazinone (Z573).

DPR detected eight pesticides and four of their degradation products in public and private drinking water wells (Table 3 and Appendix B). We routinely detect atrazine, bromacil, diuron, norflurazon, prometon, simazine, and several degradates in agricultural areas where these pesticides have been used. DPR began restricting the use of these pesticides in the mid-1980s following the determination that legal agricultural use had caused ground water contamination. DPR's ground water protection regulations require growers and professional applicators to observe strict application requirements for these commonly detected pesticides in areas of California that are very vulnerable to ground water contamination. DPR also detected hexazinone and tebuthiuron in areas where these pesticides have been used to produce agricultural crops or to control weeds in rights of ways. We are currently investigating these detections to determine how these pesticides reached ground water.

No detections exceeded drinking water quality standards established by CDPH or advisory levels established by the U.S. EPA (Table 3 and Appendix C).

Table 5. Pesticides detected by DPR from January 2007 through June 2008 and DPR's response to these detections.

Pesticides Detected	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Atrazine	19	0.05 – 0.6	Atrazine is registered for use as an agricultural herbicide and is regulated by DPR as a ground water contaminant. DPR samples for atrazine in all monitoring studies. CDPH regulates this chemical as a drinking water contaminant.[13] None of the atrazine detections exceeded the MCL of 1 ppb or the PHG of 0.15 ppb.

[12] See the following section, "Actions Taken to Prevent Ground Water Contamination," for more information about this study.

Table 5. Pesticides detected by DPR from January 2007 through June 2008 and DPR's response to these detections, con't.

Pesticides Detected	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Bromacil	32	0.05 – 5.2	Bromacil is registered for use as an agricultural herbicide and is regulated by DPR as a ground water contaminant. DPR samples for bromacil in all current ground water monitoring studies. CDPH has not established or adopted an MCL, PHG, or Notification Level for bromacil.
Deethyl-simazine or deisopropyl-atrazine (ACET)	132	0.05 – 1.79	ACET is a degradation product of atrazine and simazine. DPR routinely samples ground water for this degradation product and controls potential contamination by regulating pesticides containing the parent A.I.(s). CDPH has not established or adopted an MCL, PHG, or Notification Level for ACET.
Deethyl-atrazine (DEA)	21	0.05 – 0.429	DEA is a degradation product of atrazine. DPR routinely samples ground water for this degradation product and controls potential contamination by regulating pesticides containing the parent active ingredient. CDPH has not established or adopted an MCL, PHG, or Notification Level for DEA.
Desmethyl-norflurazon (DSMN)	59	0.054 – 1.86	Desmethyl-norflurazon is a degradation product of norflurazon. DPR routinely samples ground water for this degradation product and controls potential contamination by regulating pesticides containing the parent A.I. CDPH has not established or adopted an MCL, PHG or Notification Level for desmethyl-norflurazon.
Diamino-chlorotriazine (DACT)	144	0.05 – 7.158	DACT is a degradation product of atrazine or simazine. DPR routinely samples ground water for this degradation product and controls potential contamination by regulating pesticides containing the parent A.I. CDPH has not established or adopted an MCL, PHG, or Notification Level for DACT.
Diuron	72	0.05 – 1.084	Diuron is registered as an agricultural herbicide and is regulated by DPR as a ground water contaminant. CDPH has not established or adopted an MCL, PHG, or Notification Level for diuron.

[13] See Appendix B for more information about mandatory water quality standards established by CDPH and suggested limits established by the U. S. EPA.

Table 5. Pesticides detected by DPR from January 2007 through June 2008 and DPR's response to these detections, con't.

Pesticides Detected	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Hexazinone	8	0.062 – 0.247	Hexazinone is registered as an agricultural herbicide but is not regulated as a ground water contaminant. DPR continues to sample ground water for hexazinone in areas where the pesticide is used while investigating the source(s) of the reported detections to determine the appropriate regulatory response. CDPH has not established or adopted an MCL, PHG, or Notification Level for hexazinone.
Norflurazon	38	0.05 – 2.48	Norflurazon is registered as an agricultural herbicide and is regulated by DPR as a ground water contaminant. CDPH has not established or adopted an MCL, PHG, or Notification Level for norflurazon.
Prometon	2	0.062 – 0.067	Prometon is registered as an agricultural herbicide and is regulated by DPR as a ground water contaminant. CDPH has not established or adopted an MCL, PHG, or Notification Level for prometon.
Simazine	104	0.05 – 0.68	Simazine is registered as an agricultural herbicide and is regulated by DPR as a ground water contaminant. CDPH regulates this chemical as a drinking water contaminant. None of the simazine detections exceeded the MCL of 4 ppb or the PHG of 4 ppb.
Tebuthiuron	4	0.054 – 0.154	Tebuthiuron is registered as an agricultural herbicide. DPR continues to sample ground water for tebuthiuron in areas where this pesticide could have been used while investigating the source(s) of the reported detections to determine the appropriate regulatory response. CDPH has not established or adopted an MCL, PHG, or Notification Level for tebuthiuron.

Sampling Results Summarized by County

California Department of Public Health

The number of public supply wells and pesticides sampled annually in each county is related to the number and size of the regulated water systems located within each county. For this reporting period, the median number of public supply wells sampled per county was 21 and ranged from 673 in Los Angeles County to one well in Alpine, Calaveras, and Imperial counties. The median number of pesticides analyzed per county was 57 and ranged from 95 in Orange County to 6 in Imperial County. CDPH did not report sampling data for San Francisco and Sierra counties (Appendix D).

Of the 3,208 public supply wells sampled by water purveyors, pesticide residues were detected in 10% (311) of the wells sampled; pesticides were not detected in 90% (2,897) of sampled wells. Water purveyors reported finding one pesticide in 297 wells with reported pesticide detections (95%) and two pesticides in the remaining 14 wells with pesticide detections (5%) (Appendix D).

DBCP, an agricultural fumigant banned in the early 1980s, was found in nearly all wells sampled for pesticides in counties with three or more positive wells (Table 4, Appendix D and Appendix E).Agricultural counties had the highest percentage of wells with detections versus the total wells sampled: Fresno (59%), Tulare (30%), Merced (25%), San Joaquin (22%), Stanislaus (21%), San Bernardino (15%), and Kern (14%).

Table 6. Public supply wells with pesticide detections reported by CDPH summarized by county and pesticide.

County	Summary		By Pesticide											
	Wells Sampled	Wells with Detections	1,2-D	Benzene	Chloromethane	Chlorthal-dimethyl acid	DBCP	EDB	Hexachlorobenzene	Methyl bromide	Naphthlalene	Tebuthiuron	Trichlorobenzene	Xylene
Fresno	152	89	1				89	4						
Kern	198	28	1	1			21	7						
Los Angeles	673	19			14		4			1		2		
Madera	40	3					3	1						
Merced	48	12		1			11	1						1
Riverside	204	11					11							
Sacramento	147	5			1		2	1						1
San Bernardino	255	38			1	1	37							
San Joaquin	93	20					20	1	1					
Santa Clara	152	3			1						1		1	
Sonoma	75	4			4					2				
Stanislaus	125	26					26							
Tulare	127	38					38							

Department of Pesticide Regulation

DPR sampled 387 public and private drinking water wells in 21 counties for pesticides regulated as ground water contaminants (atrazine, bromacil, diuron, norflurazon, prometon, and simazine and several degradation products) and for hexazinone, a suspected ground water contaminant (Table 1 and Appendix D). Approximately 130 of these wells were also monitored for tebuthiuron (59 wells) and for napropamide and oryzalin (74 wells) (Appendix B). All of the pesticides that DPR currently samples for are classified as herbicides and are used to control weeds in agricultural crops, fallow fields and rights-of-way (Appendix G).

DPR detected 12 pesticides and pesticide degradation products in 200 wells in 15 counties (Table 5 and Appendix D). DPR did not detect any pesticides in 64 wells sampled in Butte (25 wells), Colusa (10 wells), Glenn (17 wells), Santa Clara (7 wells), Ventura (4 wells), and Yolo (1 well) counties (Appendix D).

The most frequently detected pesticides and degradation products were ACET and DACT (degradation products of simazine), diuron, DSMN (a degradation product of norflurazon), and simazine. Simazine is used citrus and grape production; diuron is used in alfalfa and citrus production and in rights-of-way; and norflurazon is used in alfalfa, almond, citrus, and grape production (Appendix G). These pesticides are often used by growers and rights-of-way managers on an annual or more frequent basis to maintain effective weed control. Fresno and Tulare counties are among the top producers of many of these crops, which along with the presence of highly vulnerable soils, has resulted in widespread ground water contamination in these counties (2007 Crop Reports for Fresno and Tulare counties). Almost all domestic wells sampled in Fresno and Tulare counties contained residues of simazine, ACET and DACT. Diuron and desmethyl-norflurazon were detected in about half of these wells and bromacil was consistently found in about one-third of them (Garretson, 2008).

DPR has a higher detection rate than CDPH because our monitoring goals are different:

- DPR selectively monitors in vulnerable areas where large amounts of agricultural pesticides are used in crop production or rights-of-way.
- Annually, DPR samples a network of approximately 60 domestic wells in Fresno and Tulare counties that have a history of pesticide contamination. DPR established this network in 1999 to assess the effectiveness of more stringent pesticide use regulations.
- DPR uses analytical methods that allow the unequivocal identification of pesticide residues as low as 0.05 ppb. Mandatory water quality limits for pesticides used in the regulation of public drinking water wells tend to be higher than 0.05 ppb (Appendix C). Due to cost constraints, water purveyors develop less sensitive analytical methods to meet the higher mandatory reporting limits.

Table 7. Wells with pesticide detections reported by DPR summarized by county and pesticide.

County	Summary		By Pesticide											
	Wells Sampled	Wells with Detections	ACET	Atrazine	Bromacil	DACT	DEA	Desmethyl-norflurazon	Diuron	Hexazinone	Norflurazon	Prometon	Simazine	Tebuthiuron
Fresno	108	72	58	2	13	65	3	29	29	3	19	1	52	
Kern	15	6	4		2	6			1				2	
Kings	3	1							1					
Los Angeles	20	11	2	5			4		1	1	1		7	3
Madera	9	4	2			3	1		4					
Merced	18	7	5	1		7	1	4			2		2	
Monterey	4	1	1											
Orange	6	4											4	
Riverside	3	3	2	1	2	2	1		2				2	
San Bernardino	5	2	1		2	1			1				1	
San Diego	12	5		1			1							4
San Joaquin	14	9	3			6		3	2	1	1		3	
Solano	24	11	5	7		5	6	1	1	1	1		1	1
Stanislaus	25	15	9	1		11	1	6	4	2	3	1	2	
Tulare	57	49	40	1	13	38	3	16	26		11		28	
Total	**323**	**200**	**132**	**19**	**32**	**144**	**21**	**59**	**72**	**8**	**38**	**2**	**104**	**8**

Well Location Information

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. DPR can provide general location information (county, township, range, and section) to members of the public upon request.

For more information on the availability of well monitoring information, please refer to DPR's Policy on Release of Well Data Collected by the Department of Pesticide Regulation Concerning Wells Sampled for Pesticide Residue <http://www.cdpr.ca.gov/docs/emon/grndwtr/index.htm>, or contact DPR's Ground Water Protection Program at 916-324-4039.

ACTIONS TAKEN TO PREVENT GROUND WATER CONTAMINATION

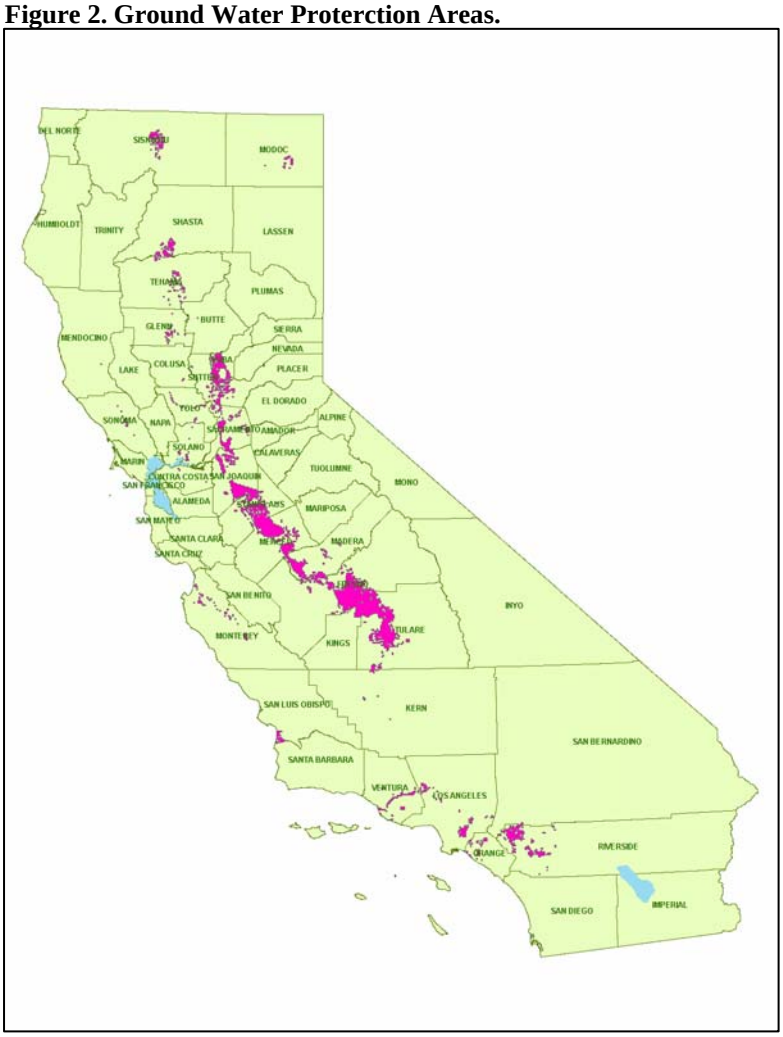
DEPARTMENT OF PESTICIDE REGULATION

As required by PCPA (FAC 13152), this section describes recent actions by DPR to prevent pesticides from migrating to California's ground water.

Protecting Vulnerable Areas from Pesticide Contamination

Regulating the Use of Pesticides Found in Ground Water through Permitting

Figure 2. Ground Water Proterction Areas.



Under the PCPA, pesticides detected in ground water at levels that pollute or threaten to pollute ground water were usually expected to be prohibited unless future contamination could be controlled. Between 1989–1999, DPR adopted mandated statewide mitigation measures for aldicarb and bentazon, and some mandatory but mainly advisory mitigation measures for atrazine, simazine, bromacil, diuron, prometon, and norflurazon that applied only in "Pesticide Management Zones" (PMZs). PMZs, which are one-square mile sections of land around contaminated wells, had grown to encompass about 313,000 acres statewide by 2003.

In 2004, DPR adopted regulations to expand the areas where certain pesticides[14] are regulated to 2.4 million acres (Figure 2), and to adopt mandatory mitigation measures to protect ground water. Called "GWPAs", these new areas include all the former existing and draft PMZs as well as sections of land with no reported detections but with soil types and depths-to-ground water that characteristic of contaminated areas. Based on the pathway of pesticide movement to ground

[14] 3CCR section 6800(a) includes: atrazine, bentazon (Anagram ®), bromacil, diuron (except for products with less than 7% diuron that are applied to foliage), norflurazon, prometon, and simazine.

water, GWPAs are designated as either leaching or runoff. For the first time, DPR had identified a basis for not only regulating pesticides to prevent pesticide contamination before it occurs but also targeting mitigation measures to the pathway of contamination. Growers and pesticide applicators must obtain a permit from the County Agricultural Commissioner (CAC) before they may use a regulated pesticide in a leaching or runoff GWPA. The permit specifies the pesticide use modifications, tailored to the specific vulnerability of the intended treatment site, which the applicator must follow. The permittee must notify the CAC within 24–48 hours before application so that the CAC may inspect the site before the application to determine whether the permit use modifications are still appropriate, and during and after the application to ensure compliance with the permit.

For more information on the regulation of pesticide ground water contaminants in California, please refer to the DPR Fact Sheet titled: "A Better Way to Protect Ground Water." (May 2004). Available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/factsheet.pdf>.

Assessing the Effectiveness of Pesticide Use Modifications

In 1999, DPR initiated a long term monitoring study to measure the effectiveness of regulations that were enacted in 2004 to protect ground water from further contamination by pesticide residues. The wells were selected on the basis of type, location and monitoring history. DPR's well monitoring network is comprised of approximately 60 shallow, domestic wells located in GWPAs in Fresno and Tulare counties. Previous sampling by DPR showed that all of the candidate wells contained residues of pesticides regulated as ground water contaminants, including simazine, bromacil, and/or diuron.

In the fall of 1999 over 60 wells were sampled for 6 pesticides parent compounds subject to the use modifications–atrazine, simazine, diuron, bromacil, prometon, and norflurazon–and three of their breakdown products–DEA (a degradate of atrazine), and ACET and DACT (degradates of atrazine and simazine). The wells were also tested for four additional pesticides with the potential to pollute ground water: prometryn, hexazinone, cyanazine, and metribuzin. Sampling was conducted in the spring and the fall through 2002. In 2003, DPR eliminated the fall sampling event and currently only samples during the spring. In 2001, DPR eliminated prometryn, cyanazine, and metribuzin from the laboratory analysis because they were not detected in any of the preceding samples. In 2002, DPR added three hexazinone degradation products to the analytical method but, after finding residues of only one degradate in one well, eliminated them from the analysis prior to the next sampling period in 2003. In 2004, DPR added a degradate of norflurazon, DSMN, to the analytical method. DSMN residues were found in subsequent well network samples; DPR continues to monitor for DSMN and often finds it where the parent, norflurazon, is applied.

DPR has detected simazine and its degradation products, ACET and DACT, in nearly all wells at one or more sampling intervals. Diuron has been found in around half of the wells sampled and bromacil in at least a third of them. Norflurazon has been found in over 20% of the wells, but its degradation product, DSMN, has been detected in almost half the wells. DPR detected atrazine, prometon, and hexazinone at a much lower frequency than the other analytes: three wells or

fewer to date. Average concentrations ranged and were approximately:

- 0.1 ppb for atrazine, simazine, prometon, hexazinone and DEA
- 0.2 to 0.3 ppb for norflurazon, diuron and DSMN
- 0.5 ppb for ACET
- 1.0 ppb for DACT and bromacil

A report that includes in-depth statistical analysis and discussion of measured trends is under review and is expected to be published in 2009. Preliminary findings from that report will include statistical analyses for trends in concentration over time that were conducted at two levels of detail. One was an overall analysis where data from all wells were pooled together and indicated the presence of decreasing trends in concentration for simazine, diuron, and bromacil with increasing trends in norflurazon concentration. Some deviation in the overall patterns were noted when the analyses were conducted for each well. The area covered by DPR's well network has a median recharge rate–the time needed for water to travel from the ground surface to a well–of seven to nine years (Spurlock, 2000). Therefore, these contrasting trends are a result of regulations in place until 2004 that established pesticide-specific use restrictions based on location. (PMZs). Continued monitoring of this network will allow DPR to assess the effectiveness of the GWPSa, implemented in 2004, that sought to protect groundwater on a regional, rather than on a pesticide-specific basis. Further analysis of pesticide use patterns, agricultural practices, well construction, and other observational information could also provide important information to explain observed effects for each well.

For more information about DPR's Domestic Well Network, refer to:

Garretson, C. 1999. Study 182: Protocol for Monitoring the Concentration of Detected Pesticides in Wells Located in Highly Sensitive Areas. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol.htm>.

Garretson, C. 2008. Study 182 / 228–Preliminary Summary Of Results For Well Sampling From 1999 Through 2008. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/memos.htm>.

Assessing the Vulnerability of Areas Outside Current GWPAs by Monitoring for Regulated and Suspected Pesticide Contaminants

Public agencies that monitor ground water, including DPR, detect pesticides that DPR regulates as ground water contaminants or considers potential ground water contaminants in areas that lie outside our current GWPAs.[15] In 2007, DPR initiated a study to determine the source(s) of these isolated detections (agricultural or urban pesticide applications) and to assess the adequacy of our current methods for identifying GWPAs. All wells were tested for atrazine, bromacil, diuron, hexazinone, norflurazon, prometon, simazine, ACET, DACT, DEA, and DSMN. As of June 30, 2008, DPR sampled 176 wells in 11 counties and found regulated pesticides in 68 wells and hexazinone residues in 5 wells (Table 6).

[15] DPR regulates the use of atrazine, bromacil, diuron, norflurazon, prometon, and simazine in GWPAs and is currently investigating hexazinone, an agricultural herbicide, as a suspected ground water contaminant.

DPR began sampling for hexazinone, an herbicide used in the production of alfalfa and forest trees, in 1992, and since that time, has detected it in 21 wells. Although DPR does not currently regulate hexazinone as a ground water contaminant, we are actively investigating current and historical hexazinone detections to determine source(s) and assess the need for regulatory action.

Table 8. Wells with detections of hexazinone and regulated ground water contaminants in areas outside of current DPR GWPAs reported by DPR in 2007 and 2008.

County	*Wells Sampled*	*Wells with Detections of Regulated Pesticides*	*Wells with Detections of Hexazinone*
Butte	15	0	0
Colusa	3	0	0
Fresno	44	18	2
Glenn	17	0	0
Kern	14	6	0
Madera	9	4	0
Merced	8	3	0
Monterey	4	1	0
Solano	19	8	1
Stanislaus	17	9	2
Tulare	26	19	0
Total	**176**	**68**	**5**

For more information about this study, please refer to:

Nordmark, C, Fossen, M. and Marade, J. 2007. Study 240: Protocol for Monitoring Ground Water In Sections with Reported Detections Outside Existing GWPAs. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol.htm>.

Developing Effective Pesticide Use Modifications

An important part of protecting California's ground water is the development of pesticide use modifications that protect ground water and are practical and effective. In 2004, DPR began an ongoing effort to assess the impacts of applying pesticides through low volume irrigation systems, a practice known as chemigation. Inefficient irrigation, such as flood and furrow methods, is a significant contributor to ground water contamination in vulnerable areas. Applying pesticides through low volume irrigation systems, such as micro-sprinklers, provides for greater uniformity of water applications, thereby decreasing the potential for over watering and the production of excessive percolating water. By reducing the amount of percolating water, growers significantly reduce the amount of pesticides that may reach ground water. Since 2004, DPR has demonstrated the use of chemigation in several different crops, on different soil types, and under different management systems. Demonstration studies allow DPR, in collaboration with growers and other researchers, to test the practicality, efficacy and safety of new pesticide use practices under actual field conditions.

DPR's most recent effort focused on the application of preemergent herbicides through a low volume micro-sprinkler irrigation system to a nectarine orchard grown on a coarse-textured soil (Da Silva, 2007b). The objectives of this study were to measure the movement of simazine in coarse soil following chemigation (application and incorporation) of simazine through a

low-volume irrigation system; to compare the depth of soil residues under different chemigation frequencies and subsequent irrigation; and to assess the level of weed control provided by this application method.

By mid-2008, all data had been collected and by late-2008, all laboratory results had been received. A preliminary review of the laboratory data indicated that the simazine residues were maintained within the crop root zone following chemigation through a low volume irrigation system. DPR expects to complete the study report by early 2010.

For more information on this study, please refer to:

DaSilva, A. 2007b**.** Study 241 - Protocol to Demonstrate the Effectiveness of Chemigation of Pre-emergence Herbicides through Low-Volume Micro-Sprinkler Irrigation Systems on a Sandy Soil. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol/241prot.pdf>.

For more information on earlier, related studies, please refer to:

Troiano, J. 2003. Study 221 - Protocol to Demonstrate the Effectiveness of Chemigation of Pre-emergence Herbicides through Low-Volume Irrigation Systems. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol/prot221.pdf>.

Basinal, L., T. Jacobsen, A. Da Silva, J. Troiano, P. Reising, D. Laird, D. Stubbs, and A. Barefoot. 2007. Demonstration of Effectiveness of Chemigation of Pre-emergence Herbicides Applied through Low Volume Irrigation Systems. Final Report to DPR. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/eh0701.pdf>.

DaSilva, A., 2007a. Study 221-Demonstration Study On Chemigation Of Simazine And Diuron On Citrus Orchard In Tulare County. Available at: <http://www.cdpr.ca.gov/docs/emon/surfwtr/caps/study221memo.pdf>.

Dias, J. and A. Da Silva. 2008. Preliminary Results For Study 221: Effect of Chemigation Injection Speed on the Efficacy and Leaching of the Pre-Emergence Herbicides Simazine and Diuron. Available at: <http://www.cdpr.ca.gov/docs/emon/surfwtr/caps/studymemo_221.pdf>.

Assessing, Identifying and Monitoring Potential Pesticide Contaminants

The purpose of the PCPA (FAC sections 13141–13152) is to prevent pesticide pollution of the ground water aquifers of the state that may be used for drinking water supplies. The PCPA outlines procedures for:

1) Obtaining physical and chemical data on agricultural use pesticide active ingredients? from pesticide manufacturers (registrants).
2) Establishing specific numerical values (SNVs [threshold values]) for data that the PCPA associates with the potential of a pesticide A.I. to leach through soil to ground water.[16]
3) Identifying agricultural use pesticide A.I.s that exceed one or more of the SNVs in both categories for persistence and mobility.[16]
4) Placing agricultural pesticide A.I.s that exceed the SNVs and are applied in specified ways[17] on the GWPL (3CCR section 6800[b]).

The PCPA requires DPR to monitor for pesticides identified as potential contaminants to determine if they have migrated to ground water as a result of legal agricultural use. DPR is also required to annually post on their Web site a list of agricultural pesticide A.I.s that exceed the SNVs, and other specified information.

For more information, please refer to DPR's Ground Water Protection List Home Page at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/list_mon.htm>.

Assessing the Ground Water Contamination Potential of New Pesticides Proposed for Registration and Use in California

Prior to their registration in California, DPR thoroughly reviews new, agricultural use pesticides that have been identified as a possible threat to ground water. DPR staff use data submitted by pesticide registrants that describe a pesticide's persistence and mobility in the environment to assess its potential to contaminate California ground water. Data is reviewed from field trials where pesticides are actually applied then monitored for movement and persistence in the soil. These data along with other physical-chemical properties of pesticides are used in computer models to estimate each pesticide's potential to contaminate ground water in leaching-vulnerable California soils. If it appears that a new pesticide is likely to be detected in ground water following normal application and irrigation practices, DPR will ask the pesticide registrant to collect additional field data to determine whether the contamination potential can be mitigated. If so, DPR may recommend pesticide label amendments that would reduce the perceived threat to ground water before approving the pesticide for use in California. A perceived continued threat to California ground water would most likely result in a recommendation for denial of California registration.

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[16] The SNVs associated with mobility are water solubility (> 3 ppm) and soil adsorption coefficient (Koc) (< 1900 cm2/gm), and the SNVs associated with persistence are hydrolysis (> 14 days half-life), aerobic soil metabolism (> 610 days half-life), and anaerobic soil metabolism (> 9 days half-life) (FAC section 13144 and 3CCR section 6804).

[17] The pesticide is intended to be applied to, or injected into, the soil by ground-based application equipment or by chemigation; or the label of the pesticide requires or recommends that the application be followed within 72 hours by flood or furrow irrigation.

For more information about the method used to assess the ground water contamination potential of pesticides, please refer to:

Troiano, J., Clayton, M. 2009. Modification of the Probabilistic Modeling Approach to Predict Well Water Concentrations Used for Assessing the Risk of Ground Water Contamination by Pesticides. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/probabilistic_model.pdf>.

Assessing the Ground Water Contamination Potential of Agricultural Fumigants

In an effort to reduce volatile organic compounds that contribute to ground-level ozone formation, DPR developed regulations to reduce the overall emissions of fumigants (3CCR, section 6447.3, et seq.). One of the mitigation measures is a post-application irrigation treatment to reduce volatilization of fumigants to the atmosphere. An empirical model was developed to determine whether the mitigation measures would shift potential contamination from the air to ground water (Dias and Clayton, 2008).

Under extreme irrigation conditions that produce large amounts of percolating water and a high potential for residue leaching, the model predicted that the mitigation measures would not cause the four registered fumigants methyl bromide, chloropicrin, methyl isothiocyanate (MITC), and 1,3-dichloropropene (1,3-D)–and three proposed fumigants–iodomethane, dimethyl disulfide (DMDS), and furfural–to contaminate ground water. The registered and proposed fumigants have much shorter soil degradation and hydrolysis half-lives than the fumigants known to previously contaminate ground water ("old fumigants") –1,2-dichloropropane (1,2-D), 1,2-dibromoethane (EDB), and 1,2-dibromo-3-chloropropane (DBCP). The model also predicted well water contamination by the old fumigants at levels that exceeded actual concentrations by two to three orders of magnitude. These results confirm our expectation that the model overestimates ground water contamination potential making it even less likely that the current and proposed fumigants will contaminate ground water. While this model cannot predict the actual concentrations that a pesticide would reach in ground water and well water, it can be used as a screening tool to determine if further evaluation is needed.

Dias, J. and M. Clayton. 2008. Updated evaluation of the ground water contamination potential of the regulations to reduce volatile organic compounds by controlling field fumigant emissions. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/2086_grndwtr.pdf>.

Collecting and Maintaining Environmental Fate Data on Agricultural Pesticides

DPR maintains information on the physical and chemical properties of agricultural pesticide A.I.s in the Pesticide Chemistry Database. This information is extracted from environmental fate studies conducted by registrants in compliance with the requirements of California's pesticide registration process. The primary use of the database is to test pesticide A.I.s against the SNVs, in accordance with the provisions of the PCPA. The SNVs are threshold values that help identify which pesticides are mobile and persistent, and thus may have the potential to contaminate ground water. Every year, DPR updates the database and posts on their Web site a new report that lists the pesticides, and their uses, that may pose a threat to Californian ground water.

To view the most recent report of agricultural pesticides that exceed mobility and persistence criteria, please see:

Bergin, R. 2008 Status Report Pesticide Contamination Prevention Act**.** Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/eh0902.pdf>**.**

Updating the Ground Water Protection List (3CCR section 6800[b])

The GWPL, found in 3CCR section 6800, became effective on January 4, 1989 and is divided into two sublists. The first, 3CCR section 6800(a), consists of seven agricultural use pesticides–atrazine, simazine, bromacil, diuron, prometon, bentazon, and norflurazon–that have been detected in ground water or soil pursuant to FAC section 13149. FAC section 13150 allows the continued sale and use of these pesticides if certain mitigating conditions have been met.

The second, 3CCR section 6800(b), currently contains 62 agricultural use pesticides that exceed SNVs and are applied in a specified manner. DPR amended this sublist in 1990, 1992, and 1999 based on the statutory requirements of FAC section 13145(d) (described above). There are three potential reasons why new pesticides may be added to 3CCR section 6800(b):

1) New A.I.s that meet the criteria are contained in products registered for use
2) SNVs are revised based on new physicochemical and environmental fate data submitted, and pesticides that previously did not exceed the SNVs, now do
3) New label language in a product containing an "old" A.I. qualifies the pesticide for listing in 3CCR section 6800(b) for the first time

On November 21, 2008, DPR issued a Notice of Proposed Action to amend 3CCR section 6800(b) by adding 40 pesticides that meet the criteria for inclusion based on their environmental fate characteristics and label use directions. The proposed pesticides are the following: azoxystrobin; bensulfuron methyl; bispyribac-sodium; clomazone; 2,4-D, 2-ethylhexyl ester; 2,4-D, diethanolamine salt; 2,4-D, isooctyl ester; 2,4-DP-P, dimethylamine salt (dichlorprop-P, dimethylamine salt); dicamba, diglycolamine salt; dicamba, dimethylamine salt; dicamba, sodium salt; diflufenzopyr, sodium salt; dimethenamid-P; dinotefuran; dithiopyr; endothall, dipotassium salt; endothall, mono (N,N-dimethyl alkylamine) salt; fenoxycarb; fludioxonil; flutolanil; halosulfuron-methyl; imazamox, ammonium salt; imazapic, ammonium salt; imazethapyr, ammonium salt; malathion; mefenoxam; methyl parathion; (S)-metolachlor; penoxsulam; piperonyl butoxide; propanil; siduron; terrazole; thiamethoxam; thiazopyr; thiobencarb; thiophanate methyl; triclopyr, butoxyethyl ester; triclopyr, triethylamine salt; and uniconizole-P.

This proposal deletes acrolein from 3CCR section 6800(b) because its revised value for anaerobic soil metabolism no longer exceeds the SNV. Since none of the updated persistence values exceeds the corresponding SNVs, acrolein no longer meets the criteria for inclusion on this list.

DPR proposes changing the current listing of *fosetyl-al technical* to *fosetyl-al*, and to include a common synonym found on pesticide labels, *aluminum tris*, in parentheses. The Act requires registrants to submit physicochemical and environmental fate characteristic data only for products registered for agricultural use. *Fosetyl-al technical* was registered for manufacturing use only by DPR while *fosetyl-al* is contained in pesticide products registered for agricultural use.

For more information about proposed and newly adopted regulations, please refer to the DPR Regulations Home Page at: <http://www.cdpr.ca.gov/docs/legbills/regshome.htm>.

Prioritizing Potential Pesticide Contaminants for Monitoring

As required by the PCPA, DPR monitors ground water in California to determine if pesticides on the GWPL have migrated to ground water as a result of legal agricultural use. Prior monitoring results indicate that the risk of ground water contamination varies with the pesticides' environmental fate, use intensity and typical application practices. Since the pesticides on the GWPL do not pose equal risks to ground water, DPR is developing a method to rank the pesticides on this list based on a comparison of their relative risks. This ranking will allow DPR to direct limited resources to monitoring for the pesticides that pose the greatest risk to ground water.

The ranking scheme will rely on information that includes pesticide use and environmental fate data, label-specific information such as application site, rate and method, and the pesticide product registration status. DPR will assign higher priority for analytical method development and field monitoring to agricultural pesticides that:

- Have a higher likelihood of ground water contamination due to their persistence and mobility in soil based on computer simulated contaminant transport modeling.
- Are used intensively or whose use is increasing based data collected through DPR's Pesticide Use Reporting Program.
- Are applied directly to the soil or are "watered in" soon after application.

Other qualitative factors, such as application method, use site and state and federal registration status, will be considered in the ranking process. Based on the first iteration of this process, DPR selected iprodione, azoxystrobin, dichloran, and ethofumesate for analytical method development and imidacloprid and S-metolachlor for our 2009 GWPL monitoring study.

DPR anticipates publishing the final GWPL ranking process to our GWPL Home Page at: <www.cdpr.ca.gov> by early 2010.

Monitoring for Potential Pesticide Contaminants

Monitoring for Napropamide and Oryzalin–2007

In 2007, DPR completed a GWPL monitoring survey for two soil applied, agricultural herbicides, napropamide and oryzalin. These pesticides are included in the GWPL and were selected for monitoring due to the reported pesticide use trends and the availability of a combined laboratory analytical method that allowed unequivocal identification of both parent A.I.s from one sample.

Seventy-four wells were sampled in nine counties during April and May 2007. No residues of napropamide or oryzalin were detected in any of the wells. All wells were also tested for atrazine, bromacil, diuron, hexazinone, norflurazon, prometon, simazine, ACET, DACT, DEA, and desmethylnorflurazon. While no hexazinone residues were detected in any wells, 32 wells had residues of at least one of the 3CCR section 6800(a) pesticides or degradation products (Table 7). All wells that had residues are located in GWPAs, where use of the detected pesticides has been modified to prevent further contamination.

Table 9. Wells with detections of napropamide, oryzalin, hexazinone and regulated ground water contaminants summarized by county and pesticide reported by DPR in 2007.

County	Wells Sampled	Wells With Detections												
		ACET	Atrazine	Bromacil	DACT	DEA	Diuron	DSMN	Hexazinone	Napropamide	Norflurazon	Oryzalin	Prometon	Simazine
Butte	10	0	0	0	0	0	0	0	0	0	0	0	0	0
Colusa	7	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	11	6	0	0	7	0	1	3	0	0	1	0	0	5
Merced	10	4	0	0	4	0	0	2	0	0	1	0	0	2
San Joaquin	10	3	0	0	6	0	0	3	0	0	1	0	0	3
Santa Clara	7	0	0	0	0	0	0	0	0	0	0	0	0	0
Stanislaus	8	4	0	0	6	0	0	3	0	0	2	0	0	0
Tulare	10	8	0	2	8	0	5	5	0	0	4	0	0	5
Yolo	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**74**	**25**	**0**	**2**	**31**	**0**	**6**	**16**	**0**	**0**	**9**	**0**	**0**	**15**

For more information about recent monitoring for napropamide and oryzalin, please refer to:

Fossen, M. 2007. Protocol for Conducting GWPL Monitoring for Fiscal Year 2006/07–Napropamide and Oryzalin. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol/gw07protocol_final.pdf>.

Fossen, M. and C. Nordmark. 2008. Study GW07–Summary of Results for Fiscal Year 2006/07 GWPL Monitoring For Napropamide and Oryzalin. Available at: <http://www.cdpr.ca.gov/docs/emon/surfwtr/caps/gw07_report_final.pdf>.

For the results of our previous monitoring studies for these A.I.s, please refer to:

Weaver, D. and J. Marade. 1999. Napropamide and Oryzalin. Available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/rpts/gwpl_9899.pdf>.

Monitoring for Tebuthiuron–2008

In 2008, DPR completed a GWPL monitoring survey for tebuthiuron, an herbicide used for weed control in noncropped areas, rights-of-ways and under asphalt (Dias, 2008). Tebuthiuron is included in the GWPL and was selected for monitoring based on detections reported by the SWRCB's GAMA Program. Sampling sites were selected based on data provided by the SWRCB's GAMA Program and by licensed pest control businesses that have applied this pesticide in various use settings. When possible, DPR sampled wells where the GAMA Program had detected tebuthiuron. DPR also sampled additional wells within a three-mile radius of most reported detections.

From April to June 2008, DPR sampled 59 wells to determine if tebuthiuron had migrated to ground water in eight California counties with high reported use. The samples were also analyzed for atrazine, simazine, diuron, prometon, bromacil, hexazinone, norflurazon, DSMN, DEA, ACET, and DACT. DPR detected tebuthiuron in four of the 59 wells sampled at concentrations that exceeded the reporting limit (RL) of 0.05 µg/L (Table 8). DPR also detected residues of atrazine, simazine, diuron, bromacil, hexazinone, norflurazon, DSMN, DEA, ACET, and DACT in 26 wells. Approximately half of the wells sampled were positive for more than one pesticide and/or degradate.

In Los Angeles County, two wells located approximately half a mile apart had tebuthiuron detections above the RL. In San Diego County one well had tebuthiuron detections above the RL. In Solano County, one well had tebuthiuron detections above the RL. None of the tebuthiuron degradates were detected. Preliminary examination indicates that the detections are possibly the result of use on rights-of way.

Table 10. **Wells with detections of tebuthiuron, hexazinone and regulated ground water contaminants summarized by county and pesticide reported by DPR in 2008.**

County	Wells sampled	Wells with Detections											
		ACET	Atrazine	Bromacil	DACT	DEA	Diuron	DSMN	Hexazinone	Norflurazon	Prometon	Simazine	Tebuthiuron
Los Angeles	20	2	5	0	0	4	1	0	1	1	0	7	2
Orange	6	0	0	0	0	0	0	0	0	0	0	4	0
Riverside	3	2	1	2	2	1	2	0	0	0	0	2	0
San Bernardino	5	1	0	2	1	0	1	0	0	0	0	1	0
San Diego	12	0	1	0	0	1	0	0	0	0	0	0	1
San Joaquin	4	0	0	0	0	0	2	0	0	1	0	0	0
Solano	5	2	2	0	2	3	0	1	0	1	0	0	1
Ventura	4	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**59**	**7**	**9**	**4**	**5**	**9**	**6**	**1**	**1**	**3**	**0**	**14**	**4**

For more information about monitoring for tebuthiuron, please refer to:

Dias, J. 2008. Study GW08 - Protocol for conducting ground water protection list monitoring for tebuthiuron for fiscal year 2007–2008. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol/gw08protocol_final.pdf>.

Monitoring for Imidacloprid and Metolachlor–2009

In 2009, DPR initiated a GWPL monitoring survey for metolachlor, s-metolachlor, imidacloprid, and the main degradates of these pesticides to determine if they have migrated to ground water in areas with high reported agricultural use or identified as being vulnerable to ground water contamination by pesticides. Metolachlor and imidacloprid are included in the GWPL and were selected for monitoring based reported pesticide use trends and the availability of laboratory analytical methods that provide unequivocal identification of the parent A.I.s and the degradation products.

Based on pesticide use data, DPR will sample for metolachlor in Fresno, Stanislaus, Kings, Merced, and San Joaquin counties and for imidacloprid in Fresno, Santa Barbara, Imperial, Kern, and Monterey counties. The wells will also be sampled for hexazinone, tebuthiuron, and the known ground water contaminants listed in 3CCR section 6800(a) and some of their degradates. Ongoing monitoring for known ground water contaminants helps DPR assess the adequacy of our mitigation measures and to determine if additional GWPAs need to be identified. Samples are also analyzed for hexazinone and tebuthiuron because those pesticides may be migrating to ground water (please see previous monitoring studies for hexazinone and tebuthiuron) and additional data is needed to formulate a regulatory decision, if necessary.

For more information about current monitoring for imidacloprid and metolachlor, please refer to:

Bergin, R. and C. Nordmark, 2009. GW09–Protocol for GWPL Monitoring for Metolachlor, S-Metolachlor, and Imidacloprid. Available at: <http://www.cdpr.ca.gov/docs/emon/surfwtr/protocols/studygw09protocol.pdf>.

For the results of our previous monitoring studies of these active ingredients, please refer to:

Weaver, D. and C. Nordmark. 2002. Alachlor, Metolachlor And Two Degradates of Each. Available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/rpts/gwpl_0001.pdf>.

Weaver, D. and C. Nordmark. 2004. Imidacloprid and Three of Its Degradates. Available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/rpts/gwpl_0304.pdf>.

Using Computer Simulated Modeling to Predict the Behavior of Pesticides in the Environment

DPR uses the LEACHM pesticide fate and transport model (Hutson and Wagenet, 1992) to help evaluate the environmental behavior of pesticides proposed for California registration. A modeling scenario was developed to simulate pesticide fate and movement in a California soil considered vulnerable to pesticides with the potential to leach (Spurlock, 2000). The model simulates an agricultural cropping scenario under typical weather conditions. Natural rainfall is supplemented with irrigation applications made during the active growing season. Pesticide applications are simulated at maximum label rates. Various physical-chemical properties of the active ingredient under evaluation are used. Values for pesticide properties particularly sensitive to model output are selected from their respective range of distribution and substituted into successive model simulations. A distribution of model-predicted outcomes result from the successive simulations. With the aid of statistical methods, estimates of pesticide concentrations in ground water are derived, with each estimate assigned a level of probability of occurrence. (Troiano and Clayton, 2008) The predicted concentrations in ground water and their associated probabilities are considered when assessing the pesticide product for California registration and use.

The LEACHM model, in conjunction with other factors, is used as a tool by DPR to help prioritize pesticides for routine ground water monitoring throughout the state. A.I.s presenting a higher estimated threat of contaminating ground water generally receive priority for ground water monitoring. Computer modeling has also been used to aid in the design of DPR field studies investigating the movement and fate of pesticides in the soil.

Spurlock, F., K. Burow, and N. Dubrovsky. 2000. Chlorofluorocarbon Dating of Herbicide-Containing Well Waters in Fresno and Tulare Counties, California. J. Environ. Qual. 29:474-483. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapref/chlordat.pdf>. Reprinted with the permission of the American Agronomy Society.

Troiano, J., and M. Clayton. 2004 Probabilistic Modeling For Risk Assessment of Ground Water Contamination by Pesticides. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/prob_mod_policy.pdf>.

Improving Contaminant Transport Modeling Tools

A field study was initiated in 2007 with the objective to develop a dataset to enhance DPR's capabilities of modeling pesticide fate in the environment. DPR uses the LEACHM pesticide fate and transport model to assess the leaching potential of A.I.s in pesticide products submitted to DPR for California registration. A limitation with the current modeling scenario is the inability to assign depth-specific residue dissipation rates to a soil profile. Studies have indicated that slower abiotic hydrolytic processes rather than biotic degradation processes dominate pesticide dissipation below soil layers containing organic matter. DPR's current modeling scenario assumes a constant residue dissipation rate with soil depth, and is based on data from pesticide field dissipation studies conducted by registrants. These studies are typically conducted near the soil surface in the presence of organic matter. This field study (Clayton, 2007) will provide

estimates of depth-specific residue dissipation rates for two commonly used pesticides, simazine and diuron. Preliminary analysis of the field data indicates that the dissipation rate of simazine and diuron is reduced at greater soil depths. The depth-specific dissipation rates and their relative ratios will be determined in 2009.

For more information about this study, please refer to:

Clayton, M. 2007. Study 245: Dissipation of simazine and diuron from surface and sub-surface depths in a leaching vulnerable California soil. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol.htm>.

STATE and REGIONAL WATER RESOURCES CONTROL BOARDS

As required by PCPA (FAC 13152), this section, prepared by the SWRCB and the RWQCBs, describes recent actions taken to prevent pesticides from migrating to California's ground water. This information is also available on the State Water Board's Web site at: <http://www.waterboards.ca.gov/gama/docs/ab2021_fy0708.pdf>.

State Water Board

State Water Board staff participated in the following activities:

- Regularly attended meetings sponsored by the DPR, including the interagency Pesticide Registration and Evaluation Committee and Pest Management Advisory Committee.

- Participated in ongoing consultations with DPR staff, University of California scientists, and pesticide manufacturers to design monitoring studies and Best Management Practices.

- Participated in discussions with U.S. Geological Survey (USGS) scientists on studies dealing with pesticides and water quality.

- Reviewed, on an ongoing basis, DPR Notices of "Materials Entering Evaluation" and advised DPR on potential water quality impacts of pesticide registration and use decisions.

- Reviewed and commented on DPR's proposed studies on pesticide and water quality pursuant to the Management Agency Agreement with DPR.

- In coordination with the USGS and LLNL, the State Water Board is implementing the GAMA. The GAMA Program has sampled over 1,700 public water supply wells for various chemicals and contaminants, including pesticides, herbicides and their degradates. The water quality results for the Southern and Central Sierra, East-Central San Joaquin Valley, South Sacramento Valley, and Kern Basins–GAMA Study Unit are summarized in Table 9.

- The State Water Board sampled over 90 domestic wells in San Diego County for various chemicals and contaminants, including pesticides, herbicides and their degradates. The results are summarized in Table 9.

SWRCB–Actions Taken in Fiscal Year 2007–2008, con't.

Table 11. Actions taken by the State Water Resources Control Board in Fiscal Year (FY) 2007–2008.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
San Diego Riverside and Orange Counties	Various GAMA monitoring sites	Pesticides, Herbicides, and Degradates	The GAMA Program has sampled over 1,200 public supply wells for various chemicals, including pesticides, herbicides and their degradates. Fifty-eight wells were sampled in the San Diego GAMA Study Unit. Out of 122 pesticides, herbicides and degradates analyzed, Simazine, deethylatrazine, prometon, and atrazine were the most frequently detected at maximum concentrations of 0.181, 0.013, 0.03, and 0.85 µg/L respectively. Seventeen other pesticides, herbicides, and degradates were detected (no concentrations were detected above drinking water standards). The San Diego GAMA Study Unit Data Summary Report is available at: <www.waterboards.ca.gov/gama>.
Napa, Sonoma, Marine, and Solano Counties	Various GAMA monitoring sites	Pesticides, Herbicides, and Degradates	Eighty-nine public supply wells were sampled in the North San Francisco Study Unit. Out of 122 pesticides, herbicides and degradates analyzed, Simazine was the most frequently detected at maximum concentration of 0.052 µg/L. Chlordiamino-s-triazine and deisopropyl atrazine were both found in two wells at estimated concentration of E0.01 µg/L.
San Joaquin, Sacramento, Stanislaus, and Contra Costa Counties	Various GAMA monitoring sites	Pesticides, Herbicides, and Degradates	Seventy public supply, irrigation, domestic and monitoring wells were sampled in the North San Joaquin Study Unit. Out of 122 pesticides, herbicides and degradates analyzed, fifteen were detected. The most frequently detected was Simazine at maximum concentration of 0.058 µg/L. Atrazine, Metolachlor, Hexazinone, Tebuthiuron, Diphenamid, Deethylatrazine, 2,6-diethylaniline, and 3,4-Dichloroaniline were also found at maximum concentrations of 0.081, 0.012, 0.066, 0.03, 0.02, 0.046, 0.004, and 0.045 µg/L, respectively. Two herbicides: DBCP and 1,2-Dibromoethane were found at respective concentration of 1.43 and 0.14 µg/L, which are above MCL for these chemicals.

SWRCB–Actions Taken in Fiscal Year 2007–2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Monterey, Santa Cruz, San Luis Obispo Counties	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Ninety-four public wells and three monitoring wells were sampled in the Monterey Bay and Salinas Valley Basins. Out of 122 pesticides, herbicides and degradates analyzed, 9 were detected. The most frequently detected was Simazine at maximum concentration of 0.02 µg/L. Deethylatrazine, Atrazine, Dacthal, Metolachlor, Deisopropyl atrazine, Dieldrin, Prometon, and Terbuthylazine were found at estimated concentrations of E0.01, 0.035, E0.004, E0.007, E0.004, E0.006, E0.01, and E0.01 µg/L, respectively.
Southern Sierra Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Forty public wells, five irrigation and five domestic wells were sampled in this study unit (part of Kern and Tulare counties). Out of 63 pesticides, herbicides and degradates, 5 were detected. Most frequently detected were Atrazine (9), Deethylatrazine (10), and Simazine (6) at maximum concentration of 0.008, E0.012, and 0.008 µg/L, respectively. Prometon and Fipronil sulfide were found at maximum concentrations of E0.01 and E0.005 µg/L, respectively.
Central Sierra Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Twenty-seven public wells and three domestic wells were sampled in this study unit (Madera and Mariposa counties). Out of 83 pesticides, 4 were detected. The most frequently detected was Simazine (4) at max. concentration of E0.008 µg/L, Deethylatrazine (2), 3,4- Dichloroaniline (2) and Atrazine (1) were found at maximum concentration of E0.007, E0.006, and E0.004 µg/L, respectively.
Southern Sacramento Valley Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Eighty-three public, irrigation, domestic and monitoring wells were sampled in this study unit (Placer, Sacramento, Sutter and Yolo counties). Out of 70 pesticides and degradates analyzed in all wells, 12 were detected. Out of additional 50 pesticides analyzed in selected wells, 10 were detected. The most frequently detected was Deethylatrazine (21) and Atrazine (15) at maximum concentration of E0.029 and 0.038 respectively. Herbicides; 3,4 Dichloroaniline (3), Molinate (3),

SWRCB–Actions Taken in Fiscal Year 2007–2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
			Simazine (3), Metolachlor (2), Hexazinone (1), Prometon (1), Tebuthiuron (1) and Metalaxyl (2) were detected at maximum concentration of E0.062, 0.066, 0.013, E0.006, E0.012, E0.007, 0.115 and 0.006 µg/L, respectively. Metalaxyl,(2), Dieldrin (2) and Isofenphos (1) were detected at 0.006, E0.004 and 0.006 µg/L, respectively. Out of additional list, Oxamyl (7), Bentazon (4), Bromacil (2), 2,4 D (1), Diuron (1), Fenuron (1), Diphenamid (1) and Deisopropyl atrazine (2) were detected at 0.08, 0.26, E0.01, E0.005, 0.029, 0.028, E0.01 and 0.042 µg/L, respectively.
Central Eastside San Joaquin Basin	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Forty-three public, 9 domestic, 6 irrigation, 3 commercial, 2 drain, and 15 monitoring wells were sampled for this study unit (Merced and Stanislaus counties). Out of 115 pesticides, herbicides and degradates, 11 were detected. The most frequently detected were Deethylatrazine (26), Simazine (19), and Atrazine (17) at maximum concentration of E0.016, 0.112 and 0.014 µg/L, respectively. Metolachlor (7), DBCP (5), 3,4 -Dichloroaniline (2), Prometon (2), Hexazinone (4), Deisopropyl atrazine (3), Diuron (1) and Norflurazon (2) were detected at maximum concentration of 0.035, 1.44, E0.01, 0.01, 0.062, E0.01, 0.03, and E0.01 µg/L, respectively.
Kern	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Forty public, 5 irrigation, 4 domestic, and 1 fire protection well were sampled for this study unit (San Joaquin and Kern counties). Out of 146 pesticides, herbicides and degradates, 12 were detected. The most frequently detected were Deethylatrazine (19), Simazine (18), and Atrazine (18) at maximum concentration of E0.011, 0.033 and 0.02 µg/L, respectively. EPTC (7), 3,4-Dichloroaniline (6), Prometryn (3), Hexazinone (2), Metolachlor (2), Prometon (2), Chlorpyrifos (1), Dieldrin (2) and Metribuzin (1) were detected at maximum concentration of 0.032, E0.006, 0.009, 0.017, 0.014, E0.01, 0.006,

SWRCB–Actions Taken in Fiscal Year 2007–2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
			E0.007, and 0.01 µg/L, respectively. Out of polar pesticides and degradates; Deisopropyl atrazine (5), Dinoseb (4), Bromacil (1), Diphenamid (2), Diuron (1) and Imazethapyr (1) were detected at maximum concentration of E0.04, E0.03, E0.01, 0.03, 0.07 and E0.01 µg/L, respectively.
Tulare County	Domestic Wells	Pesticides, Herbicides, and Degradates	One hundred eighty two domestic wells were sampled in Tulare County. Delta Laboratory analyzed water samples for DBCP only. DBCP was found in 26 wells at maximum concentration of 1.63 µg/L. Additionally, LLNL analyzed water samples from 19 wells for CDFA list of pesticides and degradates. The most frequently detected were Simazine, Diuron and Bromacil at maximum concentrations of 0.158, 0.75 and 1.021 µg/L, respectively. The most frequently detected degradates were Deisopropyl Atrazine and Deethyl Atrazine at maximum concentrations of 0.732 and 0.05 µg/L, respectively. Less frequently detected pesticides and degradates were Atrazine(0.037 µg/L), Cyanazine (0.012 µg/L), Norflurazon(1.39 µg/L), Hexazinone (0.027 µg/L), Desmethylnorflurazon(0.323 µg/L), Primodone (0.07 µg/L), Metolachlor(0.077 µg/L), and Diamino Chlorotriazine (0.099 µg/L).
San Diego County	Domestic Well	Pesticides, Herbicides, and Degradates	Under the GAMA-Domestic Well Project conducted during April–June 2008. Ninety-two wells were sampled, and 30 samples were analyzed for pesticide. No pesticides were detected in any of the samples collected.

Regional Water Boards

Region 1–Regional Water Quality Control Board, North Coast

Table 12. Actions taken by the Regional Water Quality Control Board, North Coast (Region 1) in FY 2007–2008.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Humboldt	U.S. Forest Service Nursery, McKinleyville	Chlorothalonil	USFS monitoring and assessment to prevent discharges to surface water and groundwater with RWQCB support.
	Sierra Pacific, Arcata	Pentachlorophenol, Tetrachlorophenol,	Ongoing contamination assessment and cleanup.
	Carlotta Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Beaver Lumber Company, Arcata	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Sun Valley Bulb Farms	Chlorothalonil, Dithiocarbamate	Ongoing monitoring and assessment to prevent discharges to surface water and groundwater under RWQCB direction.
	Pacific Lumber Co., Carlotta	Pentachlorophenol. Tetrachlorophenol	Ongoing contamination assessment to prevent discharges to surface water
	Schmidbauer, Arcata	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Schmidbauer, Eureka	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Simpson Plywood Mill (Old), Eureka	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Simpson Mill, Samoa	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
Siskiyou	Hi-Ridge Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Pine Mountain Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Morgan Door, Roseburg	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	J.H. Baxter	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.

Region 2–Regional Water Quality Control Board, San Francisco Bay

Table 13. Actions taken by the Regional Water Quality Control Board, San Francisco Bay (Region 2) in FY 2006-2007, and include updated pesticide data for Alameda County.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Alameda	AmChem/ Henkel Surface Technologies n/c in 08	Chlordane, Heptachlor	RWQCB oversight. Impacted soil removed in 2006 and 2007. Groundwater no longer impacted, but may require long-term monitoring after removal of cap/redevelopment.
	Jones-Hamilton	Pentachlorophenol (PCP), Tetrachlorophenol (TCP)	RWQCB Final Site Cleanup Requirements Order No. 2001-0054 adopted specified time schedule for final remedial actions. Ongoing groundwater monitoring for volatile organic compounds (VOCs), PCP, and TCP.
	Port of Oakland (Embarcadero Cove)	Chlordane, Pentachlorophenol, DDT, Endosulfan, 2,3,7,8-TCDD, DDD	Department of Toxic Substances Control (DTSC) has lead and has approved a Remedial Action Plan including continuous groundwater monitoring.
	Peerless Southern Pacific Railroad	Pentachlorophenol	City of Berkeley Health Department has lead. Additional soil and groundwater investigations required.
	FMC, Newark	EDB	RWQCB Final Site Cleanup Requirements Order No. 2002-0060 adopted. Ongoing groundwater monitoring for VOCs, specified time schedule for final cleanup actions. Groundwater cleanup underway.
Contra Costa	Chevron	Endrin, Lindane, Dieldrin, DDT, Arsenic	Submitted closure plan for Class I impoundment. A cut-off wall with a groundwater extraction trench around the impoundment has been constructed.
	Levin Metals	Aldrin, 4,4'-DDD, 4,4'-DDE, o,p,-DDT, Dieldrin, BHC	U.S. EPA lead on-site cleanup. Awaiting report of completion for remedial dredging project.

RWQCB, San Francisco Bay - Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	FMC, Richmond	DDT, DDD, DDE, Dieldrin, Chlordane, Tedion, Endosulfan, Ethion, Carbophenothion, Heptachlor	CDPH lead on-site cleanup. Cleanup completed. Monitor to assure remaining pollutants do not migrate.
Marin	Former Sonoma Mosquito Abatement District, San Rafael	DDD, DDE, DDT, Dieldrin	DTSC is lead agency. Some soil removal has already taken place (approximately 3000 yd^3 in 1992). Old monitoring wells destroyed. Seven new wells were installed in 1996. DTSC has mailed out draft deed restriction and draft O&M Agreement for site.
Solano	Travis Air Force Base	Aldrin, Heptachlor, Alpha-Chlordane, Heptachlor Epoxide	U.S. EPA leads site cleanup. Groundwater extraction, treatment and monitoring have been ongoing since 2001.

Region 3–Central Coast Regional Water Quality Control Board

Table 14. Actions taken by the Central Coast Regional Water Quality Control Board (Region 3) in FY 2007-2008.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Monterey	Monterey Soil Service, King City	EDB and DBCP	Monitored natural attenuation is used at the site for low-level residual EDB and DBCP concentrations in groundwater. Groundwater monitoring activities are expected to continue into FY 2008-2009.
Santa Clara	Castle-Veg-Tech, Morgan Hill	Toxaphene, Endrin, Lindane, Endosulfan	The Dischargers are currently out of compliance. The Central Coast Regional Water Quality Control Board will continue enforcement actions to bring the Dischargers into compliance in FY 2008-2009.
Santa Cruz	WFS-Greengro, Watsonville	1,2-DCP	Monitored natural attenuation is used at the site for low-level residual 1,2-DCP concentrations in groundwater. Groundwater monitoring activities are expected to continue into FY 2008-2009.

Region 4–Regional Water Quality Control Board, Los Angeles

Table 15. Actions taken by the Regional Water Quality Control Board, Los Angeles (Region 4) in FY 2007-2008.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
No pesticides were detected at any landfill in the Los Angeles Region that is required to submit groundwater-monitoring reports to the Regional Board.			

Region 5–Regional Water Quality Control Board, Central Valley–Sacramento

Table 16. Actions taken by the Regional Water Quality Control Board, Central Valley (Region 5, Sacramento) in FY 2007-2008.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Colusa	Moore Aviation	Atrazine	Plume contracted to less than 100 square feet. Soils have been remediated. Site was granted no further action in 2005.
Merced	Merced Municipal Airport	Alachlor, Captan, Carbophenothion (trithion), DDT (total) Dicofol (Kethane), Dieldrin, Endosulfan I, II, Endosulfan sulfate, Endrin, Endrin aldehyde, Endrin ketone, Heptachlor epoxide, Methoxychlor, Toxaphene.	Health Assessment completed. Feasibility study submitted. Groundwater treatment using Hydrogen Releasing Compound (HRC) underway.
	J.R. Simplot, Winton	1,2-DCP, 1,2,3-TCP	Organo-chlorine contaminated soil removed, soil vapor extraction removed some volatile compounds. Pilot studies using HRC and groundwater extraction/treatment system using methanol is being conducted in 2007 and 2008 to treat VOCs.
	Western Farm Service, Merced	1,2-DCP, DBCP, dinoseb, dalapon, DDT, dieldrin, toxaphene, 2,4-D, chlordane	Organo-chlorine contaminated soils were removed. A pilot study for in-situ remediation of groundwater using HRC was effective at removing constituents of concern. A feasibility study is being developed for full-scale remediation.
Sacramento	Sacramento Army Depot	Diazinon, Dursban	Assessment report requested. Federal Superfund work in progress. Cleanup of pesticides completed.
	Natomas Air Park	Dicofol, DDE, DDT, Endosulfan, Toxaphene, Dieldrin Endrin	Contaminated soils were excavated and disposed of off-site. Groundwater investigation showed that pesticides have not migrated to groundwater.

RWQCB, Central Valley-Sacramento–Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Western Farm Service, Walnut Grove	Aldrin, beta-BHC, gamma-BHC, DDD, DDE, dieldrin, heptachlor epoxide, endosulfan, disultoton, 1,2-DCP	Investigation continuing. Pesticides are associated with a drainage collection area.
San Joaquin	Occidental Chemical, Lathrop	EDB, DBCP, Sulfolane	Groundwater cleanup underway pursuant to stipulation and judgment approving settlement (1981). Currently implementing groundwater treatment system optimization, monitoring, and reporting program.
	Continental Grain Company	Carbon Tetrachloride, chloroform, 1,2-DCP, 1,2-DCA, tetrachloroethane	A pilot study evaluating zero-valent iron for in-situ treatment of groundwater was successful. Groundwater recirculation is underway to accelerate treatment.
	John Taylor Fertilizers, Stockton	Dinoseb, 1,2,3-TCP, 1,2-DCP, bromacil	Soil investigation did not identify on-site source areas for these groundwater contaminants. Investigation underway
	Defense Depot, Tracy	Dieldrin, Simazine	A Record of Decision was finalized in February 1998; it includes soil cleanup levels for simazine and dieldrin, and a groundwater cleanup level for dieldrin. Pump and treat has been implemented for main dieldrin plume. Currently, investigating small dieldrin plume in NW corner of Depot that may also require remedial actions. Two pumping tests are scheduled for September 2008.
San Joaquin	Sharpe Army Depot, Stockton	Bromacil	Monitoring has been discontinued. Remedial actions are not warranted.
	Port of Stockton, Rough & Ready Island	DDD, DDE, DDT, Heptachlor Epoxide, alachlor	Assessment ongoing. Soil removal actions have occurred and more are planned. Groundwater assessment underway.

RWQCB, Central Valley-Sacramento–Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Western Farm Service, Stockton (former Pure Gro / Brea)	1,2-DCP, Chloroform, Bromoform, 1,1-DCA, Dibromochloromethane, bromochloromethane, bromodichloromethane	Some soil was removed; two source soil areas are capped. Semi-annual groundwater monitoring and long-term cap maintenance is continuing. Health risk assessment is complete. A pilot study evaluating zero-valent iron for in-situ groundwater treatment is underway in 2006, 2007, and 2008.
	Former Oxychem/ Simplot/ PureGro, Stockton	1,2-DCP, Chlorobenzene, 1,1,2-TCA, Mevinphos, Fensulfothion, Dinoseb, Dicamba, 2,4,5-T, Atrazine, Monuron, Carbaryl, Carbofuran, Propham, Diuron, Propoxur, 2,4-DB, bromacil, chloromethane, tebuthiuron, simazine, methiocarb, MCPP, fenuron, chloroform, dichlorprop, EDB.	Primary soil source area remediated with thermal destruction. Phytoremediation in progress to treat trace constituents in soil and nitrate in groundwater
	Cal Farm Supply	b-BHC	Soils were remediated. Groundwater monitoring will determine if b-BHC remains in groundwater.
	Western Farm Service, Vernalis	DBCP, EDB, diuron, methiocarb, diazinon, aldrin, 1,2-DCP	Pilot project using hydrogen release compound for in-situ remediation successful and expanded in 2007.
Solano	John Taylor Fertilizer, Dixon	DDT, tebuthiuron	Investigation underway
	TSI, Dixon	DDT, DDE, 1,2-DCP, 1,2,3-TCP, endrin, endosulfan, methoxychlor, toxaphene, trifluralin	Some contaminated soil was removed. VOCs are being removed from the soil column with soil vapor extraction.
Stanislaus	Chemurgic Agricultural Chemicals	BHC	Excavation of areas with elevated BHC in soil completed by December 1995. Groundwater remediation by extraction and carbon filtration with monitoring ongoing.

RWQCB, Central Valley-Sacramento–Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Geer Road Landfill	1,1-DCA, 1,1,1-TCA, TCE, Chloridazon, Freons	Groundwater cleanup underway.
	Western Farm Service, Modesto	DBCP, EDB, 1,2-DCP, chlorpyrifos, DDT, disulfoton, 2,4,5-TP	Remedial work to excavate areas with elevated pollutant concentrations in soil completed. An engineered cap has been installed over a majority of the site.
	Shell Agricultural Research Facility	Cyanazine, Atrazine, Chloroform, DBCP,	Groundwater being treated with carbon absorption for organic compounds. Soil has been remediated.
Sutter	Bowles Flying Service	2,4-D, Thiobencarb, Diuron, Metalaxyl, Molinate, Simazine	Cease and Desist Order issued under the TPCA program. On DTSC's list as needing a Preliminary Endangerment Assessment. Monitoring wells installed.
	PureGro, Robbins	Alachlor, aldrin, dicofol, monuron, diphenamid, 1,2-DCA, 1,2-DCP	MRP issued for quarterly groundwater monitoring. Trees were planted on the site to phytoremediate the groundwater. Results are inconclusive at this point
	John Taylor Fertilizers, Yuba City	1,2-DCP, 1,2,3-TCP, 1,2-DCB, chlorobenzene, DBCP	Soil excavation completed, in-situ groundwater remediation using hydrogen-releasing compound is underway and is working to remove VOCs.
Yolo	Frontier Fertilizer Company, Davis	EDB, DCP, DBCP, Carbon tetrachloride	DTSC is lead agency. Thermal treatment of VOCs in vadose zone is selected remedy, with continuation of groundwater pump and treat.
	U.C. Davis, Pesticide applicator site	Chlorpyrifos, Dicamba, Atrazine, Aldrin, Simazine, Dieldrin, Endrin, DDT	Contaminated soil removed, groundwater treatment completed, site closure is being considered.
	J.R. Simplot, Courtland	1,2,3-TCP, 2,4,5-TP	Phytoremediation underway for soil and groundwater remediation.

Region 5–Regional Water Quality Control Board, Central Valley–Fresno

Table 17. Actions taken by the Regional Water Quality Control Board, Central Valley (Region 5, Fresno) in FY 2007-2008.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Fresno	Blue Hills Disposal Site, County of Fresno	Dicamba, 2,4-D, Silvex	DTSC lead. Corrective action underway.
	Thompson Hayward Agriculture & Nutrition	Alpha-BHC, Beta-BHC, Gamma-BHC, Dieldrin, DBCP, Diphenamid, Heptachlor, Heptachlor Epoxide	DTSC lead. Site has been certified by DTSC and de-listed as a U.S. EPA NPL site. Remedial Action Plan Implemented. Implementation of Operation, Maintenance, and Monitoring Plan and Agreement. Cap completed. Semi-annual reports being submitted. DTSC now preparing five-year review of the site. Deed restriction imposed.
	J.R. Simplot, Helm Facility	Dieldrin	Long-term groundwater monitoring.
	FMC Corporation, Fresno Facility	1,2,3-TCP, Aldrin, Dieldrin, DDT, DDD, DDE, Heptachlor, Lindane, Toxaphene, Ethyl Parathion, Malathion, Ethion, Endosulfan, Dimethoate, Furadan, Dinitrocresol, Dinoseb (DNBP)	DTSC lead. Discharge area capped and undergoing remediation, using SVE. 1,2,3-TCP in groundwater is driving new off-site extraction well installation, expanding the original two-well extraction system. Groundwater pilot test results show enhanced reductive dechlorination is cost prohibitive –will continue using SVE and pump and treat as primary plume control tool.
	Britz, Inc., Five Points	Toxaphene, DDT, DNBP	State Superfund site (DTSC lead). Deed restriction in place. Natural attenuation. Operation and Maintenance Plan in place. On-site remediation included capping site and constructing an engineered drainage system to contain run-off from the site.

RWQCB, Central Valley-Fresno - Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Fresno County Wells	DBCP, EDB, 1,2-D	Pesticides detected in 146 wells (AB 1803 sampling).
	Coalinga Airport	DDT, DDE, Ethion, Toxaphene, 2,4-D, Dinoseb, Malathion, Parathion, Merphos	DTSC lead on the site. Pesticides found in soil. Additional assessment proposed and work plan approved.
	Spain Air	Ethion, DEF, Parathion, Trithion, Dinoseb, Paraquat, DDE, DDT, Endosulfan II	Assessment needed.
	PureGro, Oxalis	1,2-Dichloropropane, 1,2,3-TCP, nitrate	Western Area soil assessment complete. Monitoring new wells for four quarters to set baseline prior to cleanup workplan submittal.
	Eagle Field (FUDS)	2,4-D, Pentachlorophenol,	Pesticides detected from groundwater grab samples. Additional assessment is needed.
	Broadview Water District– Bullard Avenue Air Strip	DDT Toxaphene	Pesticides detected from groundwater grab samples. Assessment in progress.
	Baptiste Property	DDT Toxaphene	Pesticides detected in soil samples. Assessment in progress. Final report to consider closure has been submitted and is undergoing review.
	Mike Perez Property	DDT Toxaphene	Pesticides detected from groundwater grab samples. Assessment in progress.
	Former Unocal - Whitesbridge Rd, Kerman	DDT, Toxaphene and Dieldrin	Initial soil investigation completed. Supplemental Soil Investigation completed.
Kern	Brown & Bryant, Inc., Arvin	1,2-D, 1,3-D, DBCP, Dinoseb, EDB, carbaryl	Federal Superfund site (DTSC lead). U.S. EPA has prepared Remedial Information Feasibility Study Report.

RWQCB, Central Valley-Fresno - Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Brown and Bryant, Inc., Shafter	DDE, DDT, Dinoseb, VOCs, (DCP, ethylene dibromide)	State Superfund site (DTSC lead). The site has been conducting a supplemental risk assessment during 2005. A Remedial Action Plan (Soil Excavation and Deed Restriction) was submitted in October 2007.
	Western Farm Service, Delano Facility	DDT, Toxaphene, Dinoseb, Dicamba	Assessment on-going, long-term monitoring on-going, impacted soils have been capped. Health Risk performed with regard in developing soil clean up levels for possible excavation.
	Puregro Company, Bakersfield	DBCP, Toxaphene	DTSC lead. Additional soil sampling conducted this year to obtain additional data to close up data- gaps. Health-Risk assessment currently being drafted.
	Dick Garriott Crop Dusting, Bakersfield	Chlordane, DDE, DDT, PCNB, Endosulfan I & II, Methoxychlor, Carbofuran, Carbaryl, Bufencarb, DEF, Tedion, Diazinon, Chlorpyrifos, Ethyl Parathion, Diuron, Dinoseb, Dicamba	CAO issued in 1993. Hydrogeological Assessment Report completed in 1993. Work in progress to determine extent of groundwater degradation. Additional groundwater monitoring wells proposed to determine extent of degradation. Title 27 cap also proposed.
	USDA, Shafter	Dichlobenil, EPTC, Prometryn, DDT, DDE, DDD, Dieldrin, Toxaphene, Silvex, PCP, Chlorpropham, Ametryne, Atrazine	U.S. EPA lead. Developing a closure plan. Soil remediation and dry well abandonment were requested in 1996 but have not been completed.
	Kern County Wells	DBCP, 1,2-D, EDB	Pesticides detected in 57 wells (AB 1803 sampling). No assessment underway.
Kings	Lemoore N.A.S.	Unspecified	Investigation ongoing.
	Blair Field	2,4-D, Dicofol, Diazinon, Propargite	Assessment needed.
	Blair Aviation	Trifluralin, Mevinphos, Phorate	Contamination assessment needed.

RWQCB, Central Valley-Fresno - Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Lakeland Dusters	DDT, Toxaphene	Contaminated soils excavated and stockpiled on site. Remediation underway.
Madera	Chowchilla Municipal Airport	Dieldrin, Alpha-BHC, Endosulfan, PCNB, DDT, DDE, Lindane	Contamination assessment needed.
	Madera Municipal Airport	DDT, DDE, Toxaphene, Dicofol, Endrin	Impacted soils have been capped. Long-term monitoring on going.
	Western Farm Service, Inc., Madera Facility	Dinoseb, DBCP, Dieldrin	Impoundment closed. Impacted soils have been capped. Long-term monitoring on going.
	Madera County Wells	DBCP	DBCP detected in two wells (AB 1803 sampling). No assessment underway.
Tulare	Mefford Field, City of Tulare	p,p'-DDT, p,p'-DDE, 2,4,5-TCP, Dicamba, DNBP, Diuron	Contamination assessment and mitigation reports needed.
	Tulare Airport	2,4-D, DNBP	Assessment needed.
	Kaweah Crop Dusters	DDT, 2,4-D, 2,4,5-T, Methoxychlor	DHS Remedial Action Order issued January 1984. Cleanup ongoing.
	Tulare County Wells	1,2-D	Detected in wells through AB 1803 sampling. No assessment underway.

Region 5–Regional Water Quality Control Board, Central Valley–Redding

Table 18. Actions taken by the Regional Water Quality Control Board, Central Valley (Region 5, Redding) in FY 2007-2008.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Butte	L.P, Remanufacturing Facility, Chico	Pentachlorophenol Tetrachlorophenol	DTSC is lead agency. The approved Final Remedial Action Plan included, in part, extracting pentachlorophenol-contaminated groundwater from four extraction wells, treating the water using granular activated carbon, and reinjecting the treated water to a dry well. Groundwater cleanup completed in 2003. Treatment system dismantled, dry well destroyed, and Waste Discharge Requirements rescinded in March 2008. Land use restricted. Groundwater monitoring continues.
Shasta	Former Branstetter Mill Site, Redding	Pentachlorophenol	Pesticides associated with former dip tank. Residential development planned. Initial investigation identified potential human health concerns. In February 2008, case referred to DTSC who has entered into a voluntary cleanup agreement with RP, further assessment planned.
Tehama	Louisiana-Pacific, Former VG Mill & Jamb, Red Bluff	Pentachlorophenol Tetrachlorophenol Stoddard Solvent	CAO Order 98-712. On-going groundwater monitoring and assessment. Groundwater remediation by extraction, carbon filtration, and re-injection proposed to reduce pollutant source and promote biodegradation.

Region 6–Regional Water Quality Control Board, Lahontan

Table 19. Actions taken by the Regional Water Quality Control Board, Lahontan (Region 6) in FY 2007-2008.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Inyo	Amargosa River at Upper Canyon	Triclopyr	In March 2004, two surface water samples collected from the Amargosa River and analyzed as part of the Region's ambient water quality monitoring program showed triclopyr at concentrations of 0.06 and 0.07 µg/L. If triclopyr is again detected, Regional Board staff will investigate possible sources.
San Bernardino	George Air Force Base	Dieldrin	A number of groundwater monitoring wells in the vicinity of the Westwinds Golf Course test positive with low levels of dieldrin. Some wells are above the California State Department of Health Services (DHS) Notification Level for dieldrin. The Air Force conducted further site assessment, including surface soil sampling to evaluate potential sources and installation of groundwater monitoring wells to define the lateral extent of dieldrin in groundwater. Groundwater monitoring continues to evaluate concentration trends. The Air Force is seeking funds to conduct additional site assessment and establish the vertical extent of dieldrin in groundwater and determine its potential to migrate into deeper waters. This site is adjacent to large municipal supply wells for the City of Adelanto. To date, those wells have not been found to contain dieldrin.
	China Lake Naval Weapons Center	4,4' DDD 4,4' DDE 4,4' DDT Dieldrin Chlordane	Sites 31 and 32 Pesticide Storage area and Golf Course Pesticide Handling area at China Lake contained pesticides in soil and low concentrations in groundwater. Area was cleaned up, contaminated soil source was removed and disposed appropriately. Groundwater is monitored, and is not used for drinking water in the area east of China Lake Playa.

RWQCB, Lahontan - Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Placer	Resort at Squaw Creek Golf Course	Clopyralid	Resort at Squaw Creek Golf Course proposed use of clopyralid for clover control. The golf course is under Waste Discharge Requirements, (WDRs) which allow only for conditional use of chemicals, including herbicides, which are approved by the Regional Board. Clopyralid was not on the list of approved herbicides. The mobility of clopyralid in soils and groundwater is much higher than other herbicides allowed under the permit. Regional Water Board staff worked with the discharger and the Resort at Squaw Creek Technical Advisory Group to develop an herbicide application plan that was protective of water quality and beneficial uses for both surface water and groundwater. Main features of the permit include: (1) Establishment of herbicide application exclusion zones around each local drinking water well, using the CDPH Drinking Water Assessment and Protection fixed radius equation; (2) implementation of a comprehensive groundwater monitoring program for clopyralid; and (3) use of approved herbicide application rates and application methods only. In June 2006, the Regional Board approved an amended WDRs to allow implementation of the herbicide application plan.
All counties in Region 6 (includes all or parts of Modoc, Lassen, Plumas, Sierra, Nevada, Placer, El Dorado, Alpine, Mono, Inyo, San Bernardino, Kern, Los Angeles Counties)	Region-wide	Herbicides	To qualify for the waiver under the Timber Harvest Activities Waiver Policy (adopted in January 2003; renewed February 2007), applicants must notify the Regional Board at least 90 days in advance of any proposed herbicide application, and provide specific information about the proposed herbicide use. They must also adhere to any monitoring program prescribed by the Executive Officer.

Region 7–Regional Water Quality Control Board, Colorado River Basin

Table 20. Actions taken by the Regional Water Quality Control Board, Colorado River Basin (Region 7) in FY 2007-2008.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Imperial	Central Brave Agricultural Service	4,4'-DDE, Endosulfan	Recalcitrant Discharger. Referred to Attorney General for nonpayment of fees.
	J.R. Simplot Company, Sandin Siding Facility	Dieldrin, 4,4'-DDT, Endrin	CAO issued. Site in remediation. Risk base corrective action in-progress (site closed in 2001).
Riverside	West Coast Flying	Endosulfan I & II, Disulfoton	Recalcitrant discharger. Referred to Attorney General for nonpayment of fees.
	Woten Aviation Services	Disyston, DEF, Ethyl Parathion, Methyl Parathion	CAO issued. U.S. EPA has lead in cleanup.
	Foster Gardner, Inc., Coachella Facility	1,2-Dichloroethane, 1,2-D, Ethylene Dibromide	CAO issued October 1991 by RWQCB. Imminent and Substantial Endangerment Order issued by DTSC on August 21, 1992. Cleanup on going. DTSC has lead in cleanup.
	Coachella Valley Mosquito Abatement District	DDT	Under investigation. Pesticide contamination insignificant, UST Cleanup only. (site closed in 2001) Site reopened in 2006, barrels discover low levels DDT. Remedial action asphalt cap. Deed restriction scheduled for late 2009.
	Crop Production Services, Blythe (Formerly Pure Gro MW-24)	1,2-Dichloropropane	Undergoing cleanup.

Region 8–Regional Water Quality Control Board, Santa Ana

Table 21. Actions taken by the Regional Water Quality Control Board, Santa Ana (Region 8), in FY 2007-2008.

COUNTY	**SITE**	PESTICIDE	**PREVENTION ACTION**
Orange	Great Lakes Chemical Corporation (formerly Great Western Savings), Irvine	1,2-D, EDB, 1,2-DCE	On-site full-scale multi-phase vacuum extraction system is continuing. GLCC now discharges to County Sanitation District of Orange County under Special Purpose Discharge Permit as of December 2001. GLCC was issued a CAO by RWQCB on April 17, 1997 for off-site remediation of impacted groundwater. GLCC is operating an on- and off-site groundwater extraction and treatment system. The full treatment system has been operating continuously since December 2001. WDRs (Order No. 0025) was rescinded in April 2002. Treated groundwater is discharged to sewer line.
Riverside	Sunnymead Mutual Water Company (North and South Well)	DBCP	Both wells were sold to Eastern Municipal Water District in February 1991. Customers are being served by the new District from other supply sources. North Well has been completely rehabilitated. South Well will be used for emergency purposes only.

RWQCB, Santa Ana - Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Arlington Basin	DBCP	Construction of a 7-MGD reverse osmosis plant with partial flow through a granular activated carbon (GAC) unit for treatment of TDS, NO_3 and DBCP was completed in September 1990. About 1.0 MGD of groundwater is treated and 0.5 MGD is bypassed. Treated water is mixed with the bypassed water and discharged to the Arlington Channel for groundwater recharge purposes by the Orange County Water District. Salt brine (0.2 MGD) is discharged to the Santa Ana Regional Interceptor, which discharges to the ocean via the Orange County Sanitation District. A second parallel transmission line has been completed to bring extracted groundwater from three wells to the reverse osmosis unit. Sale of this water to Cities of Norco and Jurupa Community Services District.
	City of Corona (Well 8, mun.)	Simazine	Well has been completely rehabilitated. Simazine was not detected in the sampling after rehabilitation work. No further action being taken. Trace of TCE has been detected in recent sampling. No further action being taken.
	Home Gardens County Water District (Wells 2 and 3, mun.)	DBCP, Simazine	Water purveyor has closed these wells and is now purchasing water from the City of Riverside.
	City of Riverside, Twin Spring, mun.	DBCP	A 9,000 gpm GAC treatment system has been installed (Palmyrita Treatment Plant)
	City of Corona (Well 17, mun.)	Simazine, DBCP	Well has been abandoned. A new well (17A) has been drilled and is in use. Trace of DBCP was detected in March 1991 sampling. Trace of TCE has been detected in recent sampling of the new well.
	City of Riverside (Russell "B," mun.)	Simazine, DBCP	Well has been abandoned and replaced with a new well. (Russell "C")

RWQCB, Santa Ana - Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	City of Riverside (Garner "B", mun.)	DBCP	A 3,200 gpm GAC treatment system has been installed (Garner B Treatment Plant)
	City of Riverside (Russell "C", mun)	DBCP	A 3,200 gpm GAC treatment system has been installed (Garner B Treatment Plant)
	City of Riverside (First Street)	DBCP	Well is not being used due to high concentrations of DBCP. No mitigation measures in effect.
Riverside	City of Riverside (Electric Street, mun.)	DBCP	A 9,000 gpm GAC treatment system has been installed (Palmyrita Treatment Plant).
	City of Riverside (Palmyrita, mun.)	DBCP	A 9,000 gpm GAC treatment system has been installed (Palmyrita Treatment Plant).
	City of Riverside (three wells, mun.)	DBCP	Water from Hunt Wells No. 6, 10, and 11 is being blended with other wells in the area. No DBCP detection in the past two years.
	City of Riverside (three wells, emergency, Downtown Riverside)	DBCP	No mitigation measures in effect. These three wells are also contaminated with industrial organic solvents.
	Riverside County Hall Of Records, (pr)	DBCP	No mitigation measures in effect. Volatile organic chemicals such as TCE and PCE have also been found. Well is used for emergency purposes only.
	Loma Linda University, Arlington, (Wells 1 and 2, mun.)	DBCP	The University water supply system is tied into the City of Riverside domestic water supply distribution system. These two wells are used for irrigation purposes at the school.
	City of Riverside (Moor-Griffith, mun.)	DBCP	A 9,000 gpm GAC treatment system has been installed (Palmyrita Treatment Plant)
	Lake Hemet Metropolitan Water District (MWD) (Wells A and B, mun.)	DBCP	The District is using well "A" for irrigation purposes. Well "B" is being used by a local farmer for irrigation purposes.
San Bernardino	Victoria Farms MWC (Well 01 and 03, mun.)	DBCP	Water purveyor has closed these wells and is now purchasing water from the City of San Bernardino.

RWQCB, Santa Ana - Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Gage System Wells (16 wells, mun.) Raub Wells (four wells, mun.)	DBCP	The City of Riverside and the Gage Canal Company operate the Gage System, which consists of 16 wells located along the Santa Ana River. These wells are being blended for domestic use. Trace amounts of radon have been detected in some of these wells. The City installed three deep wells in the area to increase blending capacity. Two GAC treatment systems (total of six wells) have been in operation since February 2000 for removal of VOCs and DBCP. Additional GAC system came on line (June 2006) for treatment of groundwater (four Raub wells). These units are located at the leading edge of an existing TCE plume. Raub treated groundwater is pumped into Gage System transmission line.
	Bunker Hill Basin: Crafton/Redlands area (36 wells)	DBCP	The City of Redlands started construction of an 8.5-MGD GAC treatment system in September 1991. This GAC system treats groundwater from two wells. Treated water is being put into the local water supply distribution system. Funding for this system is from the STATE WATER BOARD ($2.8 million) and bond money through the State Expenditure Plan ($1.9 million) that is managed by DTSC. The system has been off line since July 1997 due to presence of perchlorate above Action Level in both production wells. The DHS is reviewing effectiveness of tailored carbon system for removal of VOCs and perchlorate. Lockheed Martin has provided $3.7 million for the cleanup of groundwater supplies that the City has been conducting since 1985.
	South San Bernardino Company Water District (four wells, mun.)	DBCP	All four wells are out of service. The City of San Bernardino Water Department purchased the water district in July 1991. The City now supplies all the customers in the area.

RWQCB, Santa Ana - Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	**SITE**	PESTICIDE	**PREVENTION ACTION**
	Cucamonga VWD (15 wells, mun.)	DBCP	Five wells are inactive. Ten wells are active and water is being blended with other supply wells. Water is being purchased from MWD.
	Monte Vista CAD (three wells, mun.)	DBCP	One well has been abandoned. Two wells are active and water is being blended with other supply wells. Water is being purchased from MWD.
	City of Upland (13 wells)	DBCP	Five wells have been abandoned. Four wells are currently on standby. Four wells are active and water is being blended with other supply wells.
	City of Loma Linda (six wells, mun.)	DBCP	Two wells have been abandoned. One well is out of operation due to high nitrates. Four new deep wells have been on line since 2002.

Region 9–Regional Water Quality Control Board, San Diego

Table 22. Actions taken by the Regional Water Quality Control Board, San Diego (Region 9), in FY 2007-2008.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
San Diego	City of Oceanside Water Utility District (Well No. 12-11S/ 4W-18L1 S)	1,2-DCP (1,2-Dichloropropane)	This backup drinking water well is located in the San Luis Rey River Valley. Up to 2.3 µg/L has been detected in this well. The City of Oceanside is continuing monitoring of this well and reports to the State's DHS.
	San Diego Naval Station	Maximum Concentrations **Site 1 - Former Ship Repair Basin** 4,4-DDT = 0.11 µg/L Endosulfan II= 0.021 µg/L Heptachlor epoxide = 0.014 µg/L **Site 2 - Mole Pier** Chlorpyrifos = 0.31 µg/L Endrin = 0.011 µg/L Endrin aldehyde = 0.15 µg/L Gamma-chlordane = 0.011 µg/L Methoxychlor = 0.26 µg/L **Site 17 - NEX 32nd Street Service Station** Aldrin = 0.021 µg/L Beta-BHC= 0.018 µg/L Endrin aldehyde = 0.045 µg/L Endrin ketone = 0.021 µg/L Gamma-BHC (lindane) = 0.0069 µg/L Methoxychlor = 0.036 µg/L	Impacts to soil and groundwater is managed under Naval Base San Diego, Installation Restoration Program, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. sections 9601 et seq., "CERCLA").

RWQCB, San Diego - Actions Taken in Fiscal Year 2007-2008, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	MCB Camp Pendleton	**1111-MW4**=4,4'-DDD at 0.02 µg/L; **1A1-MW-1**=4,4'DDD at 0.01 µg/L; **09S/07W-11K01**= dalapon=0.83 µg/L; **23W-07A,B,C** = dalapon=0.43-1.7µg/L; **1111MW-3**= 4,4-DDD=0.03 µg/L; 4,4-DDE=0.08 µg/L; 4,4-DDT=0.04µg/L; **06GWCW1193** = 4,4-DDT=0.74 µg/L; **06GW09A392**= 4,4-DDD=0.52 µg/L	Groundwater monitoring activities will be conducted to determine fluctuations of pesticide concentrations with time across the site. Most concentrations detected in groundwater to date do not exceed established concentrations that are protective of human health and the environment. Two instances exceed MCLs and they were detected in 1992 and 1993 only. Currently under investigation by DTSC and RWQCB.

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Appendix A–Ground Water Sampling Results Summarized by Reporting Agency

Reporting Agency	*Total Wells Sampled*	*Total Samples Analyzed*
American Environmental Consulting Firm	1	3
California Department Of Public Health	13,617	1,693,405
California Department Of Water Resources	333	21,088
Regional Water Quality Control Board, North Coast (Region 1)	75	1,949
Regional Water Quality Control Board, San Francisco Bay (Region 2)	13	739
Regional Water Quality Control Board, Central Coast (Region 3)	27	798
Regional Water Quality Control Board, Los Angeles (Region 4)	47	865
Regional Water Quality Control Board, Central Valley (Region 5)	56	433
Regional Water Quality Control Board, Lahontan (Region 6)	2	10
Regional Water Quality Control Board, Santa Ana (Region 8)	18	18
Regional Water Quality Control Board, San Diego (Region 9)	2	5
State Water Resources Control Board	182	570
California Water Service Company	7	72
Ciba-Geigy	27	184
City Of Davis	1	6
City Of Oceanside	1	1
City Of San Francisco	11	319
California Department Of Pesticide Regulation	5,332	64,628
Fresno County	2,023	2,080
Glenn County	5	74
Imperial County	1	11
Kern County	336	3,558
Lake County	4	9
Madera County	115	151
Marin County	8	60
Modoc County	4	13
Rhone-Poulenc Ag. Co.	152	1,116
Riverside County	5	50
Sacramento County	130	1,720
San Diego County	8	16
San Luis Obispo County	2	2

Appendix A—Ground Water Sampling Results Summarized by Reporting Agency, con't.

Reporting Agency	*Total Wells Sampled*	*Total Samples Analyzed*
San Mateo County	8	368
Santa Barbara County	4	248
Santa Clara County	718	12,804
Santa Clara Valley Water District	20	576
Solano Irrigation District	10	162
Stockton - East San Joaquin Water Conservation District	49	621
Sutter County	1	4
U. S. Bureau Of Land Management	2	12
U. S. Department Of Agriculture	9	84
U. S. Environmental Protection Agency	6	623
U. S. Forest Service	49	298
U. S. Geological Survey	373	16,082
Yolo County	36	627
Yuba County	47	537

Appendix B–Well Sampling Results Summarized by Pesticide and Reporting Agency

The following table summarizes, by pesticide, the number of counties where wells were sampled, the number of wells sampled and the number of wells with detections found by CDPH in 2007 and by DPR from January 2007 through June 2008.

Pesticide	Summary		By Reporting Agency	
	Counties Sampled	Wells Sampled	CDPH Detections	DPR Detections
1,1,2,2-Tetrachloroethane	55	2,630	0[18]	NS[19]
1,2,4-Trichlorobenzene	55	2,564	0	NS
1,2-D + 1,3-D + C-3 compounds	54	2,134	0	NS
1,2-Dibromo-3-chloropropane (DBCP)	36	1,267	261	NS
1,2-Dichloropropane (1,2-D)	55	2,631	3	NS
1,3-Dichloropropene (1,3-D, telone)	45	1,324	0	NS
2,3,7,8-TCDD (dioxin)	21	320	0	NS
2,4,5-T	27	231	0	NS
2,4,5-TP (Silvex)	33	489	0	NS
2,4,6-Trichlorophenol	2	22	0	NS
2,4-D	33	492	0	NS
2,4-Dinitrophenol	2	22	0	NS
2-Dimethylethyl-5-amino-1,3,4-thiadiazole	8	59	NS	0
2-Dimethylethyl-5-methylamino-1,3,4-thiadiazol	8	59	NS	0
3-Hydroxycarbofuran	32	446	0	NS
4(2,4-DB), dimethylamine salt	13	92	0	NS
Acenaphthene	2	23	0	NS
ACET	21	387	NS	132
Acetochlor	4	36	0	NS
Acifluorfen, sodium salt	11	61	0	NS
Acrylonitrile	7	30	0	NS
Alachlor	35	848	0	0
Alachlor ethanesulfonic acid	1	1	NS	0
Alachlor oxanilic acid	1	1	NS	0
Aldicarb	32	445	0	NS
Aldicarb sulfone	32	446	0	NS
Aldicarb sulfoxide	32	446	0	NS
Aldrin	31	361	0	NS
Ametryne	1	1	0	NS

[18] Sample results that were less than the reporting limit were assigned a value of zero.
[19] NS–Not sampled.

Appendix B–Well Sampling Results Summarized by Pesticide and Reporting Agency, con't.

Pesticide	Summary		By Reporting Agency	
	Counties Sampled	Wells Sampled	CDPH Detections	DPR Detections
Atraton	1	5	0	NS
Atrazine	39	1340	0	19
Benefin (benfluralin)	1	3	0	NS
Bentazon, sodium salt	33	486	0	NS
Benzene (benzol)	55	2,642	6	NS
BHC (other than gamma isomer)	11	63	0	NS
Bromacil	38	1,018	0	32
Butachlor	36	708	0	NS
Butylate	1	1	0	NS
Carbaryl	32	426	0	NS
Carbofuran	32	467	0	NS
Carbon disulfide	23	86	0	NS
Chlordane	31	423	0	NS
Chlorobenzilate	4	14	0	NS
Chloromethane (methyl chloride)	53	1,885	24	NS
Chloroneb	5	15	0	NS
Chlorothalonil	26	162	0	NS
Chlorpropham	1	1	0	NS
Chlorpyrifos	1	1	0	NS
Chlorthal-dimethyl (dacthal / DCPA)	7	29	0	NS
Chlorthal-dimethyl acid metabolites	17	166	1	NS
Cycloate	1	1	0	NS
Dalapon	33	489	0	NS
DDD	11	60	0	NS
DDE	11	60	0	NS
DDT	12	68	0	NS
DDVP (dichlorvos)	1	2	0	NS
DEA	21	387	NS	21
Desmethylnorflurazon	21	387	NS	59
DACT	21	387	NS	144
Diazinon	34	512	0	NS
Dicamba	33	463	0	NS
Dichlorprop, butoxyethanol ester	15	69	0	NS
Dieldrin	31	342	0	NS
Dimethoate	36	636	0	NS
Dinoseb	33	489	0	NS
Diphenamid	1	1	0	NS
Diquat dibromide	32	473	2	NS
Disulfoton	2	24	0	NS
Diuron	28	494	0	72
Endosulfan	11	60	0	NS
Endosulfan sulfate	11	60	0	NS

Appendix B–Well Sampling Results Summarized by Pesticide and Reporting Agency, con't.

Pesticide	Summary		By Reporting Agency	
	Counties Sampled	Wells Sampled	CDPH Detections	DPR Detections
Endothall	30	400	0	NS
Endrin	31	445	0	NS
Endrin aldehyde	11	60	0	NS
EPTC	6	19	0	NS
Ethyl alcohol	1	3	0	NS
Ethylene dibromide (EDB)	36	1,207	15	NS
Fonofos (dyfonate)	2	24	0	NS
Glyphosate, isopropylamine salt	27	354	0	NS
Heptachlor	31	422	0	NS
Heptachlor epoxide	31	422	0	NS
Hexachlorobenzene	31	448	0	NS
Hexazinone	21	387	NS	8
Lindane (gamma-BHC)	31	446	0	NS
Linuron	1	21	0	NS
Malathion	2	129	0	NS
MCPA, dimethylamine salt	1	1	0	NS
MCPP	1	1	0	NS
Merphos	1	2	0	NS
Methiocarb	17	165	0	NS
Methomyl	32	446	0	NS
Methoxychlor	31	445	0	NS
Methyl bromide (bromomethane)	53	1,835	5	NS
Methyl parathion	2	129	0	NS
Metolachlor	36	713	0	NS
Metribuzin	36	711	0	NS
Mevinphos (phosdrin)	1	2	0	NS
Molinate	37	818	0	NS
N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea	8	59	NS	0
N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea	8	59	NS	0
Naphthalene	50	1,789	1	NS
Napropamide	10	75	0	0
Norflurazon	21	387	NS	38
Ortho-dichlorobenzene	55	2,630	0	NS
Oryzalin	9	74	NS	0
Oxamyl	32	479	0	NS
Paraquat dichloride	11	92	0	NS
Parathion or ethyl parathion	2	129	0	NS
Pentachloronitrobenzene (PCNB)	1	3	0	NS
Permethrin	5	15	0	NS
Permethrin, other related	4	14	0	NS

Appendix B–Well Sampling Results Summarized by Pesticide and Reporting Agency, con't.

Pesticide	*Summary*		*By Reporting Agency*	
	Counties Sampled	*Wells Sampled*	*CDPH Detections*	*DPR Detections*
Picloram	33	488	0	NS
Prometon	21	551	0	2
Prometryn	28	354	0	NS
Propachlor	35	678	0	NS
Propazine	1	1	0	NS
Propoxur	16	156	0	NS
Secbumeton	1	5	0	NS
Simazine	39	1,355	0	104
Simetryn	1	1	0	NS
Tebuthiuron	8	61	2	8
Terbacil	10	37	0	NS
Terbutryn	2	6	0	NS
Thiobencarb	38	882	0	NS
Toxaphene	31	427	0	NS
Triadimefon	1	1	0	NS
Trichlorobenzenes	54	2,186	1	NS
Trifluralin	24	128	0	NS
Vernolate	1	1	0	NS
Xylene	55	2,620	4	NS

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits

The following table provides updated information, as of June 30, 2008, of all reported pesticide detections in ground water. It includes the historical and current ranges of residue concentrations for all pesticides and pesticide degradation products detected. If the pesticide or pesticide degradation product was not detected during the most current reporting period, a dash is shown in the column.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
(S)-metolachlor	11/2 counties 94/2 wells	0.036 - 0.1	-	EPA HAL - 700	Selective herbicide. AR[b]. Detections reported by USGS were not verified in subsequent DPR sampling. This chemical has replaced metolachlor in California.
1,1,2,2-Tetrachloroethane	57/6 counties 8,960/6 wells	0.83 - 51.4	-	CDPH MCL - 1 PHG - 0.1	Herbicide. NR[c]
1,2,4-Trichlorobenzene	58/3 counties 8,143/5 wells	0.53 - 21	-	CDPH MCL - 5 PHG - 0.5	Herbicide. NR.
1,2-D, 1,3-D, and C-3 compounds	57/2 counties 7,676/2 wells	0.67 - 1.2	-	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.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
1,2-Dichloropropane (1,2-D)	58/24 counties 12,285/172 wells	0.1 - 160	0.63 - 3.4	CDPH MCL - 5 EPA MCL - 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.
1,3-Dichloropropene (1,3-D)	56/3 counties 9,770/6 wells	0.84 - 1.9	-	CDPH MCL - 0.5 PHG - 0.2	Fumigant. AR.
2,3,7,8-TCDD (dioxin)	35/1 counties 1,682/1 wells	13.42 - 13.42	-	CDPH MCL – 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 1,960/2 wells	0.02 - 0.21	-	EPA IRIS - 70 EPA SNARL - 70	Herbicide. NR.
2,4,5-TP (silvex)	58/3 counties 6,350/4 wells	0.15 - 1.4	-	CDPH MCL - 50 EPA MCL - 50 PHG - 25	Herbicide. NR.
2,4-D	58/12 counties 7,042/17 wells	0.3 - 46	-	CDPH MCL - 70 EPA MCL - 70 PHG - 70	Selective herbicide. AR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
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 - 420	Fungicide. NR.
ACET	36/17 counties 1,443/412 wells	0.023 - 6	0.05 - 1.79	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 7,704/5 wells	0.1 - 9	-	CDPH MCL - 2 EPA MCL - 2 PHG - 4	Selective herbicide. NR.
Alachlor ESA	10/5 counties 101/19 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]

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Alachlor OXA	10/1 counties 101/1 wells	0.05 - 0.051	-	No limits established	Breakdown product of alachlor. Alachlor is AR. DEG
Aldicarb	55/2 counties 5,763/4 wells	1.1 - 7.2	-	EPA MCL - 3 CDPH NL - 7	Systemic insecticide. AR.
Aldicarb sulfone	51/6 counties 4,565/61 wells	0.05 - 1281	-	EPA - 3 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 4,571/25 wells	0.06 - 13.2	-	EPA - 4 EPA SNARL - 10 (10-day)	Breakdown product of aldicarb. Aldicarb is AR. This compound has contaminated ground water due to LAU of aldicarb.
Aldicarb total (parent and breakdown products)	10/2 counties 110/33 wells	0.13 - 49	-	See aldicarb and individual breakdown products above	Combined reporting of aldicarb parent and breakdown products reported by some agencies. Aldicarb is AR. This compound has contaminated ground water due to LAU of aldicarb.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Aldrin	54/2 counties 5,420/24 wells	21 - 107	-	CDPH NL - 0.002 EPA IRIS - 0.21	Insecticide. NR.
Atrazine	57/25 counties 12,429/316 wells	0.001 - 8.5	0.052 - 0.599	CDPH MCL - 1 EPA MCL - 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	-	NAS HAL - 87.5	Insecticide. AR.
Benomyl	38/2 counties 1,090/2 wells	190 - 500	-	EPA IRIS – 350 PHG - 200	Systemic fungicide. AR.
Bentazon, sodium salt	55/17 counties 5,574/113 wells	0.02 - 20	-	CDPH MCL - 18 PHG - 200	Selective herbicide. AR
Benzene (benzol)	57/13 counties 7,770/24 wells	0.2 - 110	0.62 - 110	CDPH MCL - 1 EPA MCL - 5 PHG - 0.15	Benzene was an ingredient in some early grain fumigants. NR. Nonagricultural uses of industrial chemicals may contribute to these findings. Detections referred to SWRCB.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
BHC	47/1 counties 2,138/1 wells	0.08 - 0.08	-	No limits established	Insecticide. NR.
Bromacil	56/20 counties 10,220/265 wells	0.025 - 23	0.053 - 5.2	EPA SNARL - 70	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Butachlor	52/2 counties 5,390/2 wells	0.39 - 0.43	-	NAS HAL - 70	Selective herbicide. NR.
Captan	38/2 counties 1,470/3 wells	0.1 - 0.5	-	CDPH NL - 1.5, EPA IRIS - 910	Fungicide. AR.
Carbaryl	53/4 counties 5,745/4 wells	2 - 55	-	CDPH NL - 700, EPA IRIS - 700 EPA SNARL - 700	Insecticide. AR.
Carbofuran	54/4 counties 6,336/5 wells	0.016 - 0.686	-	CDPH MCL - 18 EPA MCL - 40 PHG - 1.7	Insecticide. AR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Carbon disulfide	37/6 counties 728/13 wells	0.2 - 5	-	CDPH NL - 160, EPA IRIS - 700	Fumigant. NR.
Chlordane	56/1 counties 6,674/1 wells	20 - 20	-	CDPH MCL - 0.1 EPA MCL - 2 PHG - 0.03	Insecticide. NR.
Chloromethane	57/32 counties 7,656/161 wells	0.25 - 37	0.5 - 4.61	EPA SNARL - 3	Fumigant. NR. Nonpesticidal uses of industrial chemicals may contribute to these findings. Detections referred to SWRCB.
Chlorothalonil	51/1 counties 4,375/1 wells	0.8 - 1.1	-	EPA IRIS - 110 EPA SNARL - 200 (10-day)	Fungicide. AR.
Chlorpyrifos	38/2 counties 1,405/3 wells	0.02 - 0.06	-	EPA IRIS – 21 EPA SNARL - 2	Insecticide. AR.
Chlorthal-dimethyl	33/4 counties 1,531/9 wells	0.03 - 300	-	EPA IRIS - 70 EPA SNARL - 70	Selective herbicide. AR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Chlorthal-dimethyl acid breakdown products	59/19 counties 1,717/96 wells	0.03 - 30	22 - 30	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.
Dalapon	50/1 counties 4,873/5 wells	1 - 17	-	CDPH MCL - 200 EPA MCL - 200 PHG - 790	Selective herbicide. NR.
DBCP	55/25 counties 12,415/3081 wells	0.001 - 8000	0.01 - 1.8	CDPH MCL - 0.2 EPA MCL - 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 1,867/1 wells	1.04 - 1.04	-	NSRL - 1	Insecticide. NR.
DDE	43/3 counties 3,371/6 wells	0.01 - 0.09	-	NSRL - 1	Breakdown product of DDT.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
DDT	41/3 counties 2,077/4 wells	0.02 - 0.12	-	EPA IRIS - 3.5 NSRL - 1	Insecticide. NR.
Deethyl-Atrazine (DEA)	37/19 counties 1,488/108 wells	0.001 - 2	0.05 - 0.429	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.
Demeton	46/1 counties 1,774/1 wells	1 - 1	-	EPA IRIS - 0.3	Systemic-insecticide. NR.
Demethylnorflurazon	2/2 counties 5/5 wells	0.24 – 0.57	-	No limits established	Breakdown product of norflurazon, which is AR. DPR assumes that this compound contaminated ground water due to nonpoint source applications of the parent, norflurazon and therefore detections are the result of LAU.
Desmethylnorflurazon	21/6 counties 449/64 wells	0.05 - 1.86	0.054 - 1.86	No limits established	Breakdown product of norflurazon, which is AR. DPR assumes that this compound contaminated ground water due to nonpoint source applications of the parent, norflurazon and therefore detections are the result of LAU.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Diaminochlorotriazine (DACT)	30/11 counties 867/257 wells	0.05 - 7.158	0.05 - 7.158	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.
Diazinon	56/8 counties 7,045/10 wells	0.01 - 507	-	CDPH NL - 6 EPA SNARL - 0.6	Insecticide. AR. Investigation by DPR found the detection to be due to a transcription error.
Dicamba	52/5 counties 4,697/7 wells	0.01 - 0.5	-	EPA IRIS - 210 EPA SNARL – 4000 MADLRT – 4.4	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	31/3 counties 449/3 wells	0.1 - 6.8	-	No limits established	Hormone-systemic type herbicide. NR.
Dieldrin	56/5 counties 5,471/6 wells	0.05 - 7	-	EPA IRIS – 0.35 CDPH NL - 0.002 MADLRT – 0.02	Insecticide. NR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Dimethoate	54/3 counties 6,548/3 wells	0.38 - 10	-	CDPH NL – 1, EPA IRIS - 1.4	Insecticide. AR.
Dinoseb	50/1 counties 5,904/1 wells	30 - 30	-	CDPH MCL - 7 EPA MCL - 7	Herbicide, desiccant. AR
Diquat dibromide	46/6 counties 4,518/9 wells	0.67 - 549.1	0.67 - 0.77	CDPH MCL - 20 EPA - 20 PHG - 15	Selective herbicide. AR.
Diuron	54/22 counties 8,056/510 wells	0.015 - 5.2	0.05 - 1.084	EPA IRIS - 14 EPA SNARL - 21	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 2,830/10 wells	0.01 - 34.7	-	EPA IRIS - 42	Insecticide. AR.
Endosulfan sulfate	47/2 counties 2,184/3 wells	0.15 - 0.48	-	No limits established	Breakdown product of endosulfan. Endosulfan is AR.
Endothall, disodium salt	49/2 counties 3,998/3 wells	100 - 548.1	-	CDPH MCL - 100 EPA MCL - 100 PHG - 580	Selective herbicide. NR. Early 1989 detections were not confirmed by DPR monitoring. Inactive in 1992.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Endrin	58/4 counties 7,022/5 wells	0.03 - 2	-	CDPH MCL - 2 EPA - 2 PHG - 2	Insecticide. NR.
EPTC	40/1 counties 2,269/1 wells	5.6 - 170	-	EPA IRIS – 180 NSRL – 3.5	Selective herbicide. AR.
Ethylene dibromide	56/20 counties 8,423/183 wells	0.006 - 4.7	0.01 - 0.47	CDPH MCL - 0.05 EPA MCL - 0.05 PHG - 0.01	Fumigant, insecticide, nematocide. 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 MCL - 0.5 EPA MCL - 5 PHG - 0.4	Fumigant. NR.
Ethylene thiourea	8/1 counties 67/1 wells	0.725 - 0.725	-	EPA IRIS - 0.6 EPA SNARL - 300 (10-day)	Fumigant. NR.
Glyphosate, isopropylamine salt	51/1 counties 4,542/1 wells	20 - 20	-	CDPH MCL - 700 EPA MCL - 700 PHG - 1,000	Nonselective, postemergence herbicide. AR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Heptachlor	56/4 counties 6,448/12 wells	0.01 - 0.25	-	CDPH MCL - 0.01 EPA MCL - 0.4 PHG - 0.008	Insecticide. NR.
Heptachlor epoxide	56/1 counties 6,444/1 wells	0.01 - 0.01	-	No limits established	Breakdown product of heptachlor. Heptachlor is NR.
Hexazinone	47/10 counties 2,354/27 wells	0.05 - 0.55	0.062 - 0.247	EPA IRIS - 230 EPA HAL - 400	Selective herbicide. AR. Detections have been determined to result from nonpoint source pesticide applications but no LAU determination has been made. CUI [d]
Lindane (gamma-BHC)	58/3 counties 7,103/5 wells	0.05 - 180	-	CDPH MCL - 0.2 EPA MCL - 0.2 PHG - 0.032	Insecticide. AR.
Malathion	37/1 counties 1,220/1 wells	0.32 - 0.32	-	CDPH NL – 160, EPA IRIS - 140 EPA SNARL - 100	Insecticide. AR.
Merphos	21/2 counties 427/2 wells	1 - 1.5	-	EPA IRIS - 0.2	Defoliant. NR.
Methomyl	52/2 counties 5,308/2 wells	0.8 - 15	-	EPA IRIS - 180 EPA SNARL - 200	Insecticide. AR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Methoxychlor	57/1 counties 6,622/2 wells	0.5 - 0.5	-	CDPH MCL - 30 EPA MCL - 40 PHG - 30	Insecticide. NR.
Methyl bromide	58/14 counties 11,933/32 wells	0.5 - 6.4	0.59 - 4.6	EPA IRIS - 9.8 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 5,622/1 wells	1.1 - 1.1	-	HAL – 700 EPA SNARL - 44	Selective herbicide. AR. Now replaced by (S)-metolachlor. It is difficult to distinguish between the two compounds in most chemical analysis methods.
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
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 7,123/1 wells	1.1 - 1.1	-	EPA SNARL - 70	Herbicide. AR
Mexacarbate	23/1 counties 4,27/1 wells	22 - 22	-	No limits established	Insecticide. NR

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Molinate	55/7 counties 7,294/14 wells	0.002 - 29	-	CDPH MCL - 20 EPA IRIS - 14	Selective herbicide. AR.
Molinate sulfoxide	17/1 counties 210/1 wells	0.8 - 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 - 5	-	EPA IRIS - 14	Insecticide. AR.
Naphthalene	57/12 counties 7,824/26 wells	0.5 - 66	1.04 - 1.04	CDPH NL-170, EPA IRIS - 14 EPA SNARL - 100	Fumigant. NR in California since 1991.
Norflurazon	34/8 counties 1,110/69 wells	0.022 - 2.48	0.05 - 2.48	EPA IRIS - 280	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Ortho-Dichlorobenzene	58/9 counties 11,161/10 wells	0.56 - 12	-	CDPH MCL - 600 EPA MCL - 600 PHG - 600	Herbicide and insecticide. NR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Paraquat dichloride	32/3 counties 885/5 wells	0.91 - 16	-	EPA IRIS - 3.2 EPA SNARL - 30	Herbicide. AR.
Picloram	51/3 counties 4,945/5 wells	0.1 - 1.1	-	CDPH MCL - 500 EPA MCL - 500 PHG - 500	Selective herbicide. NR.
Prometon	49/13 counties 5,197/52 wells	0.05 - 80	0.062 - 0.067	EPA IRIS - 110 EPA SNARL- 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 8,370/4 wells	0.1 - 2.3	-	EPA IRIS - 28	Selective herbicide. AR.
Propachlor	52/1 counties 5,297/1 wells	1.1 - 1.1	-	EPA IRIS - 91 EPA SNARL - 90	Selective herbicide. NR.
Propazine	41/1 counties 1,100/1 wells	0.2 - 0.2	-	EPA IRIS - 14 EPA SNARL - 10	Selective herbicide. NR.
Propham	35/1 counties 1,063/1 wells	6 - 6	-	EPA IRIS - 140 EPA SNARL - 100	Selective herbicide. NR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
Propoxur	45/2 counties 1,498/2 wells	4 - 5	-	CDPH NL – 30, EPA IRIS - 2.8 EPA SNARL - 3	Insecticide. AR.
Simazine	57/29 counties 12,973/840 wells	0.002 - 49.2	0.05 - 0.68	CDPH MCL - 4 EPA MCL - 4 PHG - 4	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Tebuthiuron	27/6 counties 223/14 wells	0.005 - 27	0.054 - 27	EPA IRIS - 490 EPA SNARL - 500	Herbicide. AR CUI.
Tetrachloroethylene	9/3 counties 193/5 wells	0.2 - 2.5	-	CDPH MCL – 5 EPA MCL - 5 PHG - 0.06	Insecticide. NR.
Tetrachlorvinphos	23/1 counties 189/1 wells	1 - 1	-	EPA IRIS - 210	Insecticide. AR.
Thiobencarb	55/6 counties 7,084/9 wells	0.006 - 8.7	-	PHG - 70 EPA IRIS - 70	Selective herbicide. AR.
Thiram	2/1 counties 18/4 wells	5 - 17	-	EPA IRIS - 35	Fungicide. AR.
Toxaphene	58/4 counties 7,144/6 wells	1 - 57	-	CDPH MCL - 3 EPA MCL - 3 PHG - 0.03	Insecticide. NR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*
TPA	10/8 counties 274/35 wells	0.1 - 15	-	No limits established	Breakdown product of chlorthal-dimethyl. DEG
Trichlorobenzenes	57/6 counties 7,592/6 wells	0.58 - 3.9	0.58 - 0.58	No limits established	Herbicide. NR.
Trifluralin	37/2 counties 1,256/2 wells	0.01 - 0.9	-	EPA SNARL - 5	Selective herbicide. AR.
Xylene	58/32 counties 10,997/112 wells	0.25 - 1100	0.5 - 436.6	CDPH MCL - 1,750 EPA MCL - 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) The following abbreviations apply to the Water Quality Limits from Marshak 2006
1) CDPH = California Department of Public Health drinking water standard
2) NAS = National Academy of Sciences drinking water standard
3) OEHHA = Office of Environmental Health Hazards Assessment (California)
4) PHG = Office of Environmental Health Hazard Assessment's California public health goal
5) US EPA = U. S. Environmental Protection Agency drinking water standard
6) NL = Notification level; a regulatory standard from CDPH
7) HAL = Lifetime Health Advisory Level
8) IRIS = USEPA integrated risk information system reference dose as a drinking water level
9) MCL= maximum contamination level; a regulatory standard
10) NSRL= OEHHA no-significant cancer risk
11) MADLRT = OEHHA maximum-allowable-dose-level for reproductive toxicity
12) PHG = OEHHA's California public health goal
13) SNARL = Suggested no-adverse-response level for toxicity other than cancer risk

(b) AR: Actively registered in California

(c) NR: Not registered in California

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Wells with Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Water Quality Limits (ppb)[a]*	*FY 2006-2007 Information: Type of Compound, Registration Status, Comments*

[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–Well Sampling Results Summarized by County and Reporting Agency

Summary, by county, of the number of pesticides related compounds analyzed, the number of wells sampled, the number of wells with detections, the number of the pesticides related compounds analyzed and wells sampled data by that done by DPR and that done by other agencies, reported for the period from July 1, 2007 to June 30, 2008.

COUNTY	Summary				By Reporting Agency							
					CDPH				DPR			
	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections
Alameda	60	0	23	0	60	0	23	0	-[20]	-	-	-
Alpine	11	0	1	0	11	0	1	0	-	-	-	-
Amador	11	0	3	0	11	0	3	0	-	-	-	-
Butte	68	1	85	1	59	1	60	1	13	0	25	0
Calaveras	11	0	1	0	11	0	1	0	-	-	-	-
Colusa	28	0	13	0	17	0	3	0	13	0	10	0
Contra Costa	60	1	8	1	60	1	8	1	-	-	-	-
Del Norte	11	0	3	0	11	0	3	0	-	-	-	-
El Dorado	57	0	15	0	57	0	15	0	-	-	-	-
Fresno	75	14	260	161	66	3	152	89	13	11	108	72
Glenn	23	0	26	0	12	0	9	0	11	0	17	0
Humboldt	12	0	8	0	12	0	8	0	-	-	-	-
Imperial	6	0	1	0	6	0	1	0	-	-	-	-
Inyo	14	1	4	1	14	1	4	1	-	-	-	-
Kern	92	9	213	34	84	4	198	28	14	5	15	6
Kings	38	2	34	3	30	1	31	2	11	1	3	1
Lake	75	0	12	0	75	0	12	0	-	-	-	-
Lassen	12	0	3	0	12	0	3	0	-	-	-	-
Los Angeles	95	11	682	30	85	4	673	19	16	8	20	11
Madera	65	6	49	7	58	2	40	3	11	4	9	4
Marin	20	0	3	0	20	0	3	0	-	-	-	-
Mariposa	15	0	8	0	15	0	8	0	-	-	-	-

[20] Dash–Not Sampled

Appendix D–Well Sampling Results Summarized by County and Reporting Agency, con't.

COUNTY	Summary				By Reporting Agency							
					CDPH				DPR			
	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections
Mendocino	75	2	19	2	75	2	19	2	-	-	-	-
Merced	48	11	66	19	38	4	48	12	13	7	18	7
Modoc	12	0	9	0	12	0	9	0	-	-	-	-
Mono	55	0	6	0	55	0	6	0	-	-	-	-
Monterey	74	2	97	2	67	1	93	1	11	1	4	1
Napa	52	0	10	0	52	0	10	0	-	-	-	-
Nevada	11	0	2	0	11	0	2	0	-	-	-	-
Orange	106	1	209	4	95	0	208	0	16	1	6	4
Placer	12	0	12	0	12	0	12	0	-	-	-	-
Plumas	14	0	3	0	14	0	3	0	-	-	-	-
Riverside	88	8	207	14	77	1	204	11	16	7	3	3
Sacramento	67	4	147	5	67	4	147	5	-	-	-	-
San Benito	43	0	7	0	43	0	7	0	-	-	-	-
San Bernardino	90	8	259	40	79	3	255	38	16	5	5	2
San Diego	86	3	52	5	74	0	41	0	16	3	12	5
San Francisco	NR	NR	NR	NR	NR	NR	NR	NR	-	-	-	-
San Joaquin	77	9	107	29	63	2	93	20	18	7	14	9
San Luis Obispo	71	0	50	0	71	0	50	0	-	-	-	-
San Mateo	80	2	24	2	80	2	24	2	-	-	-	-
Santa Barbara	59	0	34	0	59	0	34	0	-	-	-	-
Santa Clara	72	3	159	3	63	3	152	3	13	0	7	0
Santa Cruz	62	1	23	1	62	1	23	1	-	-	-	-
Shasta	12	0	25	0	12	0	25	0	-	-	-	-
Sierra	NR	NR	NR	NR	NR	NR	NR	NR	-	-	-	-
Siskiyou	14	0	11	0	14	0	11	0	-	-	-	-
Solano	72	10	37	11	60	0	13	0	16	10	24	11
Sonoma	79	2	75	4	79	2	75	4	-	-	-	-
Stanislaus	70	11	150	41	60	1	125	26	13	10	25	15
Sutter	12	0	3	0	12	0	3	0	-	-	-	-
Tehama	12	1	38	2	12	1	38	2	-	-	-	-

Appendix D–Well Sampling Results Summarized by County and Reporting Agency, con't.

COUNTY	Summary				By Reporting Agency							
					CDPH				DPR			
	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections
Trinity	10	0	2	0	10	0	2	0	-	-	-	-
Tulare	69	10	183	87	60	1	127	38	13	9	57	49
Tuolumne	27	0	7	0	27	0	7	0	-	-	-	-
Ventura	70	0	36	0	58	0	32	0	16	0	4	0
Yolo	71	1	26	1	62	1	25	1	13	0	1	0
Yuba	59	1	26	1	59	1	26	1	-	-	-	-

Appendix E–Well Sampling Results Summarized by County and Pesticide

Counties with pesticide detections during this period are marked with an asterisk. The total number of wells with detections in a county in these tables may exceed the number in each county in Appendix D due to repeat sampling in the same well during the reporting period.

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.

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

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Alameda	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	23	
	1,2,4-Trichlorobenzene	23	
	1,2-D + 1,3-D + C-3 compounds	23	
	1,2-Dichloropropane (propylene dichloride)	23	
	1,3-Dichloropropene (1,3-D, telone)	14	
	2,3,7,8-TCDD (dioxin)	14	
	2,4,5-TP (silvex)	14	
	2,4-D	14	
	3-Hydroxycarbofuran	14	
	Alachlor	14	
	Aldicarb	14	
	Aldicarb sulfone	14	
	Aldicarb sulfoxide	14	
	Aldrin	13	
	Atrazine	14	
	Bentazon, sodium salt	14	
	Benzene (benzol)	23	
	Bromacil	13	
	Butachlor	13	
	Carbaryl	14	
	Carbofuran	14	
	Carbon disulfide	14	
	Chlordane	14	
	Chloromethane (methyl chloride)	17	
	Chlorthal-dimethyl acid degradates	14	
	Dalapon	14	
	DBCP	18	
	Diazinon	13	
	Dicamba	14	
	Dieldrin	13	
	Dimethoate	14	
	Dinoseb	14	
	Diquat dibromide	14	
	Diuron	14	
	Endothall	14	
	Endrin	14	
	Ethylene dibromide	18	
	Glyphosate, isopropylamine salt	14	
	Heptachlor	14	
	Heptachlor epoxide	14	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Alameda	Chemical	Wells Sampled	Wells with Detections
	Hexachlorobenzene	14	
	Lindane (gamma-BHC)	14	
	Methomyl	14	
	Methoxychlor	14	
	Methyl bromide (bromomethane)	17	
	Metolachlor	13	
	Metribuzin	13	
	Molinate	14	
	Naphthalene	23	
	Ortho-dichlorobenzene	23	
	Oxamyl	14	
	Paraquat dichloride	14	
	Picloram	14	
	Prometryn	13	
	Propachlor	13	
	Simazine	14	
	Thiobencarb	14	
	Toxaphene	14	
	Trichlorobenzenes	23	
	Xylene	23	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Alpine	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 (propylene dichloride)	1	
	Benzene (benzol)	1	
	Carbon disulfide	1	
	Chloromethane (methyl chloride)	1	
	Methyl bromide (bromomethane)	1	
	Ortho-dichlorobenzene	1	
	Trichlorobenzenes	1	
	Xylene	1	

Amador	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 (propylene dichloride)	3	
	Benzene (benzol)	3	
	Carbon disulfide	2	
	Chloromethane (methyl chloride)	3	
	Methyl bromide (bromomethane)	3	
	Ortho-dichlorobenzene	3	
	Trichlorobenzenes	3	
	Xylene	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Butte	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	55	
	1,2,4-Trichlorobenzene	55	
	1,2-D + 1,3-D + C-3 compounds	52	
	1,2-Dichloropropane (propylene dichloride)	55	
	1,3-Dichloropropene (1,3-D, telone)	8	
	2,4,5-T	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	1	
	ACET (deethyl-simazine or deisopropyl-atrazine)	25	
	Alachlor	13	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Aldrin	1	
	Atrazine	38	
	Bentazon, sodium salt	1	
	Benzene (benzol)	55	
	Bromacil	38	
	Butachlor	13	
	Carbaryl	1	
	Carbofuran	1	
	Carbon disulfide	3	
	Chlordane	1	
	Chloromethane (methyl chloride)	14	1
	Chlorothalonil	1	
	Dalapon	1	
	DBCP	1	
	Deethyl-atrazine (DEA)	25	
	Desmethylnorflurazon	25	
	Diaminochlorotriazine (DACT)	25	
	Diazinon	2	
	Dicamba	1	
	Dieldrin	1	
	Dimethoate	13	
	Dinoseb	1	
	Diquat dibromide	1	
	Diuron	26	
	Endothall	1	
	Endrin	1	
	Ethylene dibromide	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Butte	Chemical	Wells Sampled	Wells with Detections
	Glyphosate, isopropylamine salt	5	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	1	
	Hexazinone	25	
	Lindane (gamma-BHC)	1	
	Methomyl	1	
	Methoxychlor	1	
	Methyl bromide (bromomethane)	13	
	Metolachlor	13	
	Metribuzin	13	
	Molinate	13	
	Naphthalene	51	
	Napropamide	10	
	Norflurazon	25	
	Ortho-dichlorobenzene	55	
	Oryzalin	10	
	Oxamyl	1	
	Picloram	1	
	Prometon	25	
	Propachlor	13	
	Simazine	38	
	Thiobencarb	13	
	Toxaphene	1	
	Trichlorobenzenes	52	
	Trifluralin	1	
	Xylene	52	

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 (propylene dichloride)	1	
	Benzene (benzol)	1	
	Carbon disulfide	1	
	Chloromethane (methyl chloride)	1	
	Methyl bromide (bromomethane)	1	
	Ortho-dichlorobenzene	1	
	Trichlorobenzenes	1	
	Xylene	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Colusa	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 (propylene dichloride)	3	
	1,3-Dichloropropene (1,3-D, telone)	1	
	ACET (deethyl-simazine or deisopropyl-atrazine)	10	
	Atrazine	11	
	Benzene (benzol)	3	
	Bromacil	10	
	Carbon disulfide	1	
	Chloromethane (methyl chloride)	3	
	Deethyl-atrazine (DEA)	10	
	Desmethylnorflurazon	10	
	Diaminochlorotriazine (DACT)	10	
	Diuron	10	
	Hexazinone	10	
	Methyl bromide (bromomethane)	3	
	Molinate	1	
	Naphthalene	2	
	Napropamide	7	
	Norflurazon	10	
	Ortho-dichlorobenzene	3	
	Prometon	10	
	Simazine	11	
	Thiobencarb	1	
	Trichlorobenzenes	3	
	Xylene	3	

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

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Contra Costa	Chemical	Wells Sampled	Wells with Detections
	Lindane (gamma-BHC)	5	
	Methomyl	4	
	Methoxychlor	5	
	Methyl bromide (bromomethane)	8	
	Metolachlor	5	
	Metribuzin	5	
	Molinate	5	
	Naphthalene	8	
	Ortho-dichlorobenzene	8	
	Oxamyl	4	
	Paraquat dichloride	4	
	Picloram	5	
	Prometryn	5	
	Propachlor	5	
	Simazine	5	
	Thiobencarb	5	
	Toxaphene	5	
	Trichlorobenzenes	8	
	Xylene	4	

Del Norte	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	2	
	1,2-Dichloropropane (propylene dichloride)	3	
	Benzene (benzol)	2	
	Chloromethane (methyl chloride)	2	
	Methyl bromide (bromomethane)	3	
	Naphthalene	2	
	Ortho-dichlorobenzene	2	
	Trichlorobenzenes	2	
	Xylene	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

El Dorado	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	9	
	1,2,4-Trichlorobenzene	9	
	1,2-D + 1,3-D + C-3 compounds	9	
	1,2-Dichloropropane (propylene dichloride)	9	
	2,3,7,8-TCDD (dioxin)	6	
	2,4,5-T	12	
	2,4,5-TP (silvex)	12	
	2,4-D	12	
	3-Hydroxycarbofuran	12	
	Alachlor	12	
	Aldicarb	12	
	Aldicarb sulfone	12	
	Aldicarb sulfoxide	12	
	Aldrin	12	
	Atrazine	12	
	Bentazon, sodium salt	12	
	Benzene (benzol)	9	
	Bromacil	12	
	Butachlor	12	
	Carbaryl	12	
	Carbofuran	12	1
	Chlordane	12	
	Chloromethane (methyl chloride)	9	
	Chlorothalonil	12	
	Dalapon	12	
	DBCP	12	
	Diazinon	12	
	Dicamba	12	
	Dieldrin	12	
	Dimethoate	12	
	Dinoseb	12	
	Diquat dibromide	12	
	Endothall	12	
	Endrin	12	
	Ethylene dibromide	12	
	Glyphosate, isopropylamine salt	12	
	Heptachlor	12	
	Heptachlor epoxide	12	
	Hexachlorobenzene	12	
	Lindane (gamma-BHC)	12	
	Methomyl	12	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

El Dorado	Chemical	Wells Sampled	Wells with Detections
	Methoxychlor	12	
	Methyl bromide (bromomethane)	9	
	Metolachlor	12	
	Metribuzin	12	
	Molinate	12	
	Naphthalene	8	
	Ortho-dichlorobenzene	9	
	Oxamyl	12	
	Picloram	12	
	Propachlor	12	
	Simazine	12	
	Thiobencarb	13	
	Toxaphene	12	
	Trichlorobenzenes	9	
	Trifluralin	12	
	Xylene	9	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Fresno	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	85	
	1,2,4-Trichlorobenzene	83	
	1,2-D + 1,3-D + C-3 compounds	85	
	1,2-Dichloropropane (propylene dichloride)	85	1
	1,3-Dichloropropene (1,3-D, telone)	69	
	2,4,5-T	3	
	2,4,5-TP (silvex)	4	
	2,4-D	4	
	3-Hydroxycarbofuran	5	
	ACET (deethyl-simazine or deisopropyl-atrazine)	108	58
	Alachlor	33	
	Aldicarb	5	
	Aldicarb sulfone	5	
	Aldicarb sulfoxide	5	
	Aldrin	5	
	Atrazine	140	2
	Bentazon, sodium salt	4	
	Benzene (benzol)	85	
	Bromacil	136	13
	Butachlor	28	
	Carbaryl	5	
	Carbofuran	4	
	Carbon disulfide	6	
	Chlordane	9	
	Chloromethane (methyl chloride)	77	
	Chlorothalonil	5	
	Chlorthal-dimethyl (dacthal / DCPA)	1	
	Dalapon	4	
	DBCP	125	89
	Deethyl-atrazine (DEA)	108	3
	Desmethylnorflurazon	108	29
	Diaminochlorotriazine (DACT)	108	65
	Diazinon	21	
	Dicamba	4	
	Dichlorprop, butoxyethanol ester	1	
	Dieldrin	5	
	Dimethoate	28	
	Dinoseb	4	
	Diquat dibromide	3	
	Diuron	108	29
	Endothall	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Fresno	Chemical	Wells Sampled	Wells with Detections
	Endrin	9	
	EPTC	4	
	Ethylene dibromide	111	4
	Glyphosate, isopropylamine salt	4	
	Heptachlor	9	
	Heptachlor epoxide	9	
	Hexachlorobenzene	9	
	Hexazinone	108	3
	Lindane (gamma-BHC)	9	
	Methiocarb	1	
	Methomyl	5	
	Methoxychlor	9	
	Methyl bromide (bromomethane)	77	
	Metolachlor	28	
	Metribuzin	28	
	Molinate	28	
	Naphthalene	83	
	Napropamide	11	
	Norflurazon	108	19
	Ortho-dichlorobenzene	85	
	Oryzalin	11	
	Oxamyl	4	
	Picloram	4	
	Prometon	112	1
	Prometryn	10	
	Propachlor	27	
	Propoxur	1	
	Simazine	140	52
	Terbacil	5	
	Thiobencarb	28	
	Toxaphene	9	
	Trichlorobenzenes	85	
	Trifluralin	7	
	Xylene	85	

Glenn	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	9	
	1,2,4-Trichlorobenzene	9	
	1,2-D + 1,3-D + C-3 compounds	9	
	1,2-Dichloropropane (propylene dichloride)	9	
	1,3-Dichloropropene (1,3-D, telone)	1	
	ACET (deethyl-simazine or deisopropyl-atrazine)	17	
	Atrazine	17	
	Benzene (benzol)	9	
	Bromacil	17	
	Chloromethane (methyl chloride)	1	
	Deethyl-atrazine (DEA)	17	
	Desmethylnorflurazon	17	
	Diaminochlorotriazine (DACT)	17	
	Diuron	17	
	Hexazinone	17	
	Methyl bromide (bromomethane)	1	
	Naphthalene	9	
	Norflurazon	17	
	Ortho-dichlorobenzene	9	
	Prometon	17	
	Simazine	17	
	Trichlorobenzenes	9	
	Xylene	9	

Humboldt	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	8	
	1,2,4-Trichlorobenzene	8	
	1,2-D + 1,3-D + C-3 compounds	8	
	1,2-Dichloropropane (propylene dichloride)	8	
	1,3-Dichloropropene (1,3-D, telone)	2	
	Benzene (benzol)	8	
	Chloromethane (methyl chloride)	8	
	Methyl bromide (bromomethane)	8	
	Naphthalene	8	
	Ortho-dichlorobenzene	8	
	Trichlorobenzenes	8	
	Xylene	8	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Imperial	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	1	
	1,2,4-Trichlorobenzene	1	
	1,2-Dichloropropane (propylene dichloride)	1	
	Benzene (benzol)	1	
	Ortho-dichlorobenzene	1	
	Xylene	1	

Inyo	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	3	
	1,2-Dichloropropane (propylene dichloride)	4	
	1,3-Dichloropropene (1,3-D, telone)	2	
	Benzene (benzol)	4	
	Chloromethane (methyl chloride)	3	1
	DBCP	1	
	Ethylene dibromide	1	
	Methyl bromide (bromomethane)	3	
	Naphthalene	3	
	Ortho-dichlorobenzene	4	
	Trichlorobenzenes	3	
	Xylene	4	
	1,1,2,2-Tetrachloroethane	4	
	1,2,4-Trichlorobenzene	4	
	1,2-D + 1,3-D + C-3 compounds	3	
	1,2-Dichloropropane (propylene dichloride)	4	
	1,3-Dichloropropene (1,3-D, telone)	2	
	Benzene (benzol)	4	
	Chloromethane (methyl chloride)	3	1
	DBCP	1	
	Ethylene dibromide	1	
	Methyl bromide (bromomethane)	3	
	Naphthalene	3	
	Ortho-dichlorobenzene	4	
	Trichlorobenzenes	3	
	Xylene	4	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Kern	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	155	
	1,2,4-Trichlorobenzene	155	
	1,2-D + 1,3-D + C-3 compounds	147	
	1,2-Dichloropropane (propylene dichloride)	155	1
	1,3-Dichloropropene (1,3-D, telone)	74	
	2,4,5-T	13	
	2,4,5-TP (silvex)	13	
	2,4-D	13	
	3-Hydroxycarbofuran	13	
	4(2,4-DB), dimethylamine salt	1	
	Acenaphthene	2	
	ACET (deethyl-simazine or deisopropyl-atrazine)	15	4
	Alachlor	76	
	Alachlor ESA	1	
	Alachlor OXA	1	
	Aldicarb	13	
	Aldicarb sulfone	13	
	Aldicarb sulfoxide	13	
	Aldrin	16	
	Atraton	5	
	Atrazine	92	
	Benefin (benfluralin)	3	
	Bentazon, sodium salt	13	
	Benzene (benzol)	157	1
	BHC (other than gamma isomer)	5	
	Bromacil	84	2
	Butachlor	66	
	Carbaryl	13	
	Carbofuran	13	
	Chlordane	14	
	Chloromethane (methyl chloride)	79	
	Chlorothalonil	2	
	Dalapon	13	
	DBCP	85	21
	DDD	2	
	DDE	2	
	DDT	2	
	DDVP (dichlorvos)	2	
	Deethyl-atrazine (DEA)	15	
	Desmethylnorflurazon	15	
	Diaminochlorotriazine (DACT)	15	6

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Kern	Chemical	Wells Sampled	Wells with Detections
	Diazinon	33	
	Dicamba	13	
	Dichlorprop, butoxyethanol ester	1	
	Dieldrin	14	
	Dimethoate	69	
	Dinoseb	13	
	Diquat dibromide	12	
	Diuron	26	1
	Endosulfan	2	
	Endosulfan sulfate	2	
	Endothall	12	
	Endrin	17	
	Endrin aldehyde	2	
	EPTC	1	
	Ethylene dibromide	67	7
	Glyphosate, isopropylamine salt	3	
	Heptachlor	16	
	Heptachlor epoxide	16	
	Hexachlorobenzene	17	
	Hexazinone	15	
	Lindane (gamma-BHC)	17	
	MCPA, dimethylamine salt	1	
	MCPP (2-(4-chloro-2-methylphenoxy)propionic acid)	1	
	Merphos	2	
	Methiocarb	1	
	Methomyl	13	
	Methoxychlor	17	
	Methyl bromide (bromomethane)	79	
	Metolachlor	69	
	Metribuzin	69	
	Mevinphos (phosdrin)	2	
	Molinate	73	
	Naphthalene	143	
	Norflurazon	15	
	Ortho-dichlorobenzene	155	
	Oxamyl	13	
	Pentachloronitrobenzene (PCNB)	3	
	Picloram	12	
	Prometon	20	
	Prometryn	16	
	Propachlor	65	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Kern	Chemical	Wells Sampled	Wells with Detections
	Propoxur	1	
	Secbumeton	5	
	Simazine	92	2
	Terbacil	1	
	Terbutryn	5	
	Thiobencarb	73	
	Toxaphene	16	
	Trichlorobenzenes	147	
	Trifluralin	2	
	Xylene	152	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Kings	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	30	
	1,2,4-Trichlorobenzene	30	
	1,2-D + 1,3-D + C-3 compounds	30	
	1,2-Dichloropropane (propylene dichloride)	30	
	1,3-Dichloropropene (1,3-D, telone)	27	
	ACET (deethyl-simazine or deisopropyl-atrazine)	3	
	Alachlor	1	
	Atrazine	4	
	Benzene (benzol)	31	2
	Bromacil	4	
	Butachlor	1	
	Carbon disulfide	1	
	Chloromethane (methyl chloride)	30	
	DBCP	5	
	Deethyl-atrazine (DEA)	3	
	Desmethylnorflurazon	3	
	Diaminochlorotriazine (DACT)	3	
	Diazinon	1	
	Dimethoate	1	
	Diuron	3	1
	EPTC	1	
	ETHYL ALCOHOL	3	
	Ethylene dibromide	3	
	Hexazinone	3	
	Methyl bromide (bromomethane)	30	
	Metolachlor	1	
	Metribuzin	1	
	Molinate	1	
	Naphthalene	30	
	Norflurazon	3	
	Ortho-dichlorobenzene	30	
	Prometon	3	
	Prometryn	1	
	Simazine	4	
	Terbacil	1	
	Thiobencarb	1	
	Trichlorobenzenes	30	
	Xylene	30	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

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

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

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

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Lassen	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 (propylene dichloride)	3	
	1,3-Dichloropropene (1,3-D, telone)	1	
	Benzene (benzol)	3	
	Chloromethane (methyl chloride)	3	
	Methyl bromide (bromomethane)	3	
	Naphthalene	3	
	Ortho-dichlorobenzene	3	
	Trichlorobenzenes	3	
	Xylene	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Los Angeles	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	661	
	1,2,4-Trichlorobenzene	603	
	1,2-D + 1,3-D + C-3 compounds	455	
	1,2-Dichloropropane (propylene dichloride)	662	
	1,3-Dichloropropene (1,3-D, telone)	244	
	2,3,7,8-TCDD (dioxin)	92	
	2,4,5-T	10	
	2,4,5-TP (silvex)	32	
	2,4,6-trichlorophenol	1	
	2,4-D	32	
	2,4-Dinitrophenol	1	
	2-Dimethylethyl-5-amino-1,3,4-thiadiazole	20	
	2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole	20	
	3-Hydroxycarbofuran	30	
	4(2,4-DB), dimethylamine salt	6	
	ACET (deethyl-simazine or deisopropyl-atrazine)	20	2
	Acetochlor	3	
	Acifluorfen, sodium salt	6	
	Alachlor	49	
	Aldicarb	30	
	Aldicarb sulfone	30	
	Aldicarb sulfoxide	30	
	Aldrin	25	
	Atrazine	75	5
	Bentazon, sodium salt	32	
	Benzene (benzol)	662	
	BHC (other than gamma isomer)	3	
	Bromacil	46	
	Butachlor	28	
	Carbaryl	29	
	Carbofuran	31	
	Carbon disulfide	7	
	Chlordane	40	
	Chloromethane (methyl chloride)	435	14
	Chlorothalonil	15	
	Chlorthal-dimethyl (dacthal / DCPA)	4	
	Chlorthal-dimethyl acid degradates	20	
	Dalapon	32	
	DBCP	54	4
	DDD	3	
	DDE	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Los Angeles	Chemical	Wells Sampled	Wells with Detections
	DDT	6	
	Deethyl-atrazine (DEA)	20	4
	Desmethylnorflurazon	20	
	Diaminochlorotriazine (DACT)	20	
	Diazinon	19	
	Dicamba	31	
	Dichlorprop, butoxyethanol ester	6	
	Dieldrin	25	
	Dimethoate	25	
	Dinoseb	32	
	Diquat dibromide	30	
	Diuron	28	1
	Endosulfan	3	
	Endosulfan sulfate	3	
	Endothall	31	
	Endrin	40	
	Endrin aldehyde	3	
	Ethylene dibromide	54	
	Glyphosate, isopropylamine salt	29	
	Heptachlor	36	
	Heptachlor epoxide	36	
	Hexachlorobenzene	37	
	Hexazinone	20	1
	Lindane (gamma-BHC)	40	
	Malathion	1	
	Methiocarb	6	
	Methomyl	30	
	Methoxychlor	40	
	Methyl bromide (bromomethane)	432	1
	Methyl parathion	1	
	Metolachlor	28	
	Metribuzin	28	
	Molinate	46	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea	20	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea	20	
	Naphthalene	224	
	Norflurazon	20	1
	Ortho-dichlorobenzene	662	
	Oxamyl	31	
	Paraquat dichloride	14	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Los Angeles	Chemical	Wells Sampled	Wells with Detections
	Parathion or ethyl parathion	1	
	Picloram	32	
	Prometon	29	
	Prometryn	10	
	Propachlor	23	
	Propoxur	3	
	Simazine	75	7
	Tebuthiuron	22	5
	Terbacil	3	
	Thiobencarb	83	
	Toxaphene	40	
	Trichlorobenzenes	456	
	Trifluralin	10	
	Xylene	662	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Madera	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	26	
	1,2,4-Trichlorobenzene	26	
	1,2-D + 1,3-D + C-3 compounds	26	
	1,2-Dichloropropane (propylene dichloride)	26	
	1,3-Dichloropropene (1,3-D, telone)	6	
	2,4,5-T	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	1	
	ACET (deethyl-simazine or deisopropyl-atrazine)	9	2
	Alachlor	25	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Aldrin	4	
	Atrazine	34	
	Bentazon, sodium salt	1	
	Benzene (benzol)	26	
	Bromacil	24	
	Butachlor	15	
	Carbaryl	1	
	Carbofuran	1	
	Chlordane	11	
	Chloromethane (methyl chloride)	26	
	Chlorothalonil	1	
	Dalapon	1	
	DBCP	39	3
	Deethyl-atrazine (DEA)	9	1
	Desmethylnorflurazon	9	
	Diaminochlorotriazine (DACT)	9	3
	Diazinon	1	
	Dicamba	1	
	Dieldrin	4	
	Dimethoate	15	
	Dinoseb	1	
	Diquat dibromide	1	
	Diuron	10	4
	Endothall	1	
	Endrin	11	
	Ethylene dibromide	37	1
	Glyphosate, isopropylamine salt	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Madera	Chemical	Wells Sampled	Wells with Detections
	Heptachlor	11	
	Heptachlor epoxide	11	
	Hexachlorobenzene	11	
	Hexazinone	9	
	Lindane (gamma-BHC)	11	
	Methomyl	1	
	Methoxychlor	11	
	Methyl bromide (bromomethane)	26	
	Metolachlor	15	
	Metribuzin	15	
	Molinate	15	
	Naphthalene	26	
	Norflurazon	9	
	Ortho-dichlorobenzene	26	
	Oxamyl	1	
	Picloram	1	
	Prometon	9	
	Propachlor	15	
	Simazine	34	
	Thiobencarb	15	
	Toxaphene	11	
	Trichlorobenzenes	26	
	Trifluralin	1	
	Xylene	26	

Marin	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 (propylene dichloride)	1	
	2,4,5-T	2	
	2,4,5-TP (silvex)	2	
	2,4-D	2	
	4(2,4-DB), dimethylamine salt	2	
	Atrazine	2	
	Bentazon, sodium salt	2	
	Benzene (benzol)	1	
	Dalapon	2	
	Dicamba	2	
	Dinoseb	2	
	Naphthalene	1	
	Ortho-dichlorobenzene	1	
	Picloram	2	
	Simazine	2	
	Trichlorobenzenes	1	
	Xylene	1	

Mariposa	Chemical	Wells Sampled	Wells with Detections
	Alachlor	8	
	Atrazine	8	
	Bromacil	8	
	Butachlor	8	
	Diazinon	3	
	Dimethoate	8	
	EPTC	3	
	Metolachlor	8	
	Metribuzin	8	
	Molinate	8	
	Prometryn	3	
	Propachlor	5	
	Simazine	8	
	Terbacil	3	
	Thiobencarb	8	

Mendocino	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	8	
	1,2,4-Trichlorobenzene	8	
	1,2-D + 1,3-D + C-3 compounds	8	
	1,2-Dichloropropane (propylene dichloride)	8	
	1,3-Dichloropropene (1,3-D, telone)	8	
	2,4,5-T	10	
	2,4,5-TP (silvex)	10	
	2,4-D	10	
	3-Hydroxycarbofuran	8	
	4(2,4-DB), dimethylamine salt	10	
	Acifluorfen, sodium salt	10	
	Acrylonitrile	8	
	Alachlor	12	
	Aldicarb	8	
	Aldicarb sulfone	8	
	Aldicarb sulfoxide	8	
	Aldrin	2	
	Atrazine	12	
	Bentazon, sodium salt	7	
	Benzene (benzol)	9	
	BHC (other than gamma isomer)	2	
	Bromacil	12	
	Butachlor	12	
	Carbaryl	8	
	Carbofuran	8	
	Carbon disulfide	8	
	Chlordane	2	
	Chlorobenzilate	2	
	Chloromethane (methyl chloride)	8	1
	Chloroneb	2	
	Chlorothalonil	2	
	Chlorthal-dimethyl acid degradates	5	
	Dalapon	10	
	DBCP	1	
	DDD	2	
	DDE	2	
	DDT	2	
	Dicamba	10	
	Dichlorprop, butoxyethanol ester	10	
	Dieldrin	2	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Mendocino	Chemical	Wells Sampled	Wells with Detections
	Dimethoate	12	
	Dinoseb	10	
	Diquat dibromide	7	1
	Endosulfan	2	
	Endosulfan sulfate	2	
	Endothall	8	
	Endrin	2	
	Endrin aldehyde	2	
	Ethylene dibromide	1	
	Heptachlor	2	
	Heptachlor epoxide	2	
	Hexachlorobenzene	2	
	Lindane (gamma-BHC)	2	
	Methiocarb	8	
	Methomyl	8	
	Methoxychlor	2	
	Methyl bromide (bromomethane)	8	
	Metolachlor	12	
	Metribuzin	12	
	Molinate	12	
	Naphthalene	8	
	Ortho-dichlorobenzene	8	
	Oxamyl	8	
	Permethrin	2	
	Permethrin, other related compounds	2	
	Picloram	10	
	Prometryn	12	
	Propachlor	13	
	Propoxur	8	
	Simazine	12	
	Thiobencarb	12	
	Toxaphene	2	
	Trichlorobenzenes	8	
	Trifluralin	2	
	Xylene	8	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Merced	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	31	
	1,2,4-Trichlorobenzene	31	
	1,2-D + 1,3-D + C-3 compounds	31	
	1,2-Dichloropropane (propylene dichloride)	31	
	1,3-Dichloropropene (1,3-D, telone)	28	
	ACET (deethyl-simazine or deisopropyl-atrazine)	18	5
	Alachlor	24	
	Aldrin	2	
	Atrazine	42	1
	Benzene (benzol)	31	1
	Bromacil	37	
	Butachlor	19	
	Chlordane	7	
	Chloromethane (methyl chloride)	31	
	Chlorothalonil	2	
	DBCP	44	11
	Deethyl-atrazine (DEA)	18	1
	Desmethylnorflurazon	18	4
	Diaminochlorotriazine (DACT)	18	7
	Diazinon	19	
	Dieldrin	2	
	Dimethoate	19	
	Diuron	18	
	Endrin	7	
	Ethylene dibromide	41	1
	Heptachlor	7	
	Heptachlor epoxide	7	
	Hexachlorobenzene	7	
	Hexazinone	18	
	Lindane (gamma-BHC)	7	
	Methoxychlor	7	
	Methyl bromide (bromomethane)	31	
	Metolachlor	19	
	Metribuzin	19	
	Molinate	19	
	Naphthalene	29	
	Napropamide	10	
	Norflurazon	18	2
	Ortho-dichlorobenzene	31	
	Oryzalin	10	
	Prometon	18	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Merced	Chemical	Wells Sampled	Wells with Detections
	Prometryn	5	
	Propachlor	18	
	Simazine	42	2
	Thiobencarb	19	
	Toxaphene	7	
	Trichlorobenzenes	31	
	Xylene	31	1

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

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

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

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Mono	Chemical	Wells Sampled	Wells with Detections
	Methyl bromide (bromomethane)	6	
	Metolachlor	2	
	Metribuzin	2	
	Molinate	3	
	Naphthalene	5	
	Ortho-dichlorobenzene	6	
	Oxamyl	2	
	Picloram	2	
	Propachlor	2	
	Simazine	3	
	Thiobencarb	3	
	Toxaphene	3	
	Trichlorobenzenes	5	
	Xylene	6	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Monterey	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	61	
	1,2,4-Trichlorobenzene	61	
	1,2-D + 1,3-D + C-3 compounds	49	
	1,2-Dichloropropane (propylene dichloride)	61	
	1,3-Dichloropropene (1,3-D, telone)	37	
	2,3,7,8-TCDD (dioxin)	2	
	2,4,5-T	55	
	2,4,5-TP (silvex)	59	
	2,4-D	59	
	3-Hydroxycarbofuran	54	
	ACET (deethyl-simazine or deisopropyl-atrazine)	4	1
	Alachlor	55	
	Aldicarb	54	
	Aldicarb sulfone	54	
	Aldicarb sulfoxide	54	
	Aldrin	8	
	Atrazine	56	
	Bentazon, sodium salt	59	
	Benzene (benzol)	61	
	Bromacil	59	
	Butachlor	55	
	Carbaryl	48	
	Carbofuran	54	
	Carbon disulfide	4	
	Chlordane	8	
	Chloromethane (methyl chloride)	47	
	Chlorothalonil	6	
	Chlorthal-dimethyl acid degradates	4	
	Dalapon	59	
	DBCP	2	
	Deethyl-atrazine (DEA)	4	
	Desmethylnorflurazon	4	
	Diaminochlorotriazine (DACT)	4	
	Diazinon	16	
	Dicamba	59	
	Dichlorprop, butoxyethanol ester	2	
	Dieldrin	8	
	Dimethoate	55	
	Dinoseb	59	
	Diquat dibromide	58	
	Disulfoton	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Monterey	Chemical	Wells Sampled	Wells with Detections
	Diuron	4	
	Endothall	4	
	Endrin	8	
	EPTC	5	
	Ethylene dibromide	2	
	Fonofos (dyfonate)	3	
	Glyphosate, isopropylamine salt	3	
	Heptachlor	8	
	Heptachlor epoxide	8	
	Hexachlorobenzene	8	
	Hexazinone	4	
	Lindane (gamma-BHC)	8	
	Methomyl	54	
	Methoxychlor	8	
	Methyl bromide (bromomethane)	34	
	Metolachlor	55	
	Metribuzin	55	
	Molinate	55	
	Naphthalene	48	
	Norflurazon	4	
	Ortho-dichlorobenzene	61	
	Oxamyl	54	
	Picloram	59	
	Prometon	7	
	Prometryn	2	
	Propachlor	53	
	Simazine	56	
	Terbacil	5	
	Thiobencarb	55	
	Toxaphene	8	
	Trichlorobenzenes	59	
	Trifluralin	6	
	Xylene	61	1

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Napa	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	7	
	1,2,4-Trichlorobenzene	6	
	1,2-D + 1,3-D + C-3 compounds	7	
	1,2-Dichloropropane (propylene dichloride)	7	
	1,3-Dichloropropene (1,3-D, telone)	1	
	2,4,5-T	7	
	2,4,5-TP (silvex)	10	
	2,4-D	10	
	3-Hydroxycarbofuran	8	
	4(2,4-DB), dimethylamine salt	7	
	Acifluorfen, sodium salt	1	
	Acrylonitrile	1	
	Aldicarb	8	
	Aldicarb sulfone	8	
	Aldicarb sulfoxide	8	
	Atrazine	9	
	Bentazon, sodium salt	10	
	Benzene (benzol)	7	
	Bromacil	3	
	Butachlor	3	
	Carbaryl	8	
	Carbofuran	8	
	Carbon disulfide	1	
	Chloromethane (methyl chloride)	7	
	Chlorthal-dimethyl acid degradates	4	
	Dalapon	10	
	DBCP	1	
	Diazinon	3	
	Dicamba	10	
	Dichlorprop, butoxyethanol ester	1	
	Dimethoate	3	
	Dinoseb	10	
	Diquat dibromide	8	
	Endothall	7	
	Ethylene dibromide	1	
	Methiocarb	5	
	Methomyl	8	
	Methyl bromide (bromomethane)	7	
	Metolachlor	3	
	Metribuzin	3	
	Molinate	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Napa	Chemical	Wells Sampled	Wells with Detections
	Naphthalene	2	
	Ortho-dichlorobenzene	7	
	Oxamyl	8	
	Picloram	10	
	Prometryn	3	
	Propachlor	3	
	Propoxur	5	
	Simazine	9	
	Thiobencarb	3	
	Trichlorobenzenes	7	
	Xylene	7	

Nevada	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	1	
	1,2-Dichloropropane (propylene dichloride)	2	
	Benzene (benzol)	2	
	Chloromethane (methyl chloride)	1	
	Methyl bromide (bromomethane)	1	
	Naphthalene	1	
	Ortho-dichlorobenzene	2	
	Trichlorobenzenes	1	
	Xylene	2	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Orange	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	206	
	1,2,4-Trichlorobenzene	206	
	1,2-D + 1,3-D + C-3 compounds	202	
	1,2-Dichloropropane (propylene dichloride)	206	
	1,3-Dichloropropene (1,3-D, telone)	199	
	2,3,7,8-TCDD (dioxin)	2	
	2,4,5-TP (silvex)	22	
	2,4,6-trichlorophenol	21	
	2,4-D	22	
	2,4-Dinitrophenol	21	
	2-Dimethylethyl-5-amino-1,3,4-thiadiazole	6	
	2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole	6	
	3-Hydroxycarbofuran	23	
	Acenaphthene	21	
	ACET (deethyl-simazine or deisopropyl-atrazine)	6	
	Acetochlor	21	
	Alachlor	130	
	Aldicarb	23	
	Aldicarb sulfone	23	
	Aldicarb sulfoxide	23	
	Aldrin	22	
	Ametryne	1	
	Atrazine	131	
	Bentazon, sodium salt	22	
	Benzene (benzol)	206	
	BHC (other than gamma isomer)	21	
	Bromacil	129	
	Butachlor	129	
	Butylate	1	
	Carbaryl	23	
	Carbofuran	23	
	Chlordane	23	
	Chloromethane (methyl chloride)	202	
	Chloroneb	1	
	Chlorothalonil	21	
	Chlorpropham	1	
	Chlorpyrifos	1	
	Chlorthal-dimethyl acid degradates	1	
	Cycloate	1	
	Dalapon	22	
	DBCP	201	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Orange	Chemical	Wells Sampled	Wells with Detections
	DDD	21	
	DDE	21	
	DDT	21	
	Deethyl-atrazine (DEA)	6	
	Desmethylnorflurazon	6	
	Diaminochlorotriazine (DACT)	6	
	Diazinon	128	
	Dicamba	22	
	Dieldrin	22	
	Dimethoate	128	
	Dinoseb	22	
	Diphenamid	1	
	Diquat dibromide	23	
	Disulfoton	21	
	Diuron	28	
	Endosulfan	21	
	Endosulfan sulfate	21	
	Endothall	23	
	Endrin	23	
	Endrin aldehyde	21	
	Ethylene dibromide	201	
	Fonofos (dyfonate)	21	
	Glyphosate, isopropylamine salt	23	
	Heptachlor	23	
	Heptachlor epoxide	23	
	Hexachlorobenzene	23	
	Hexazinone	6	
	Lindane (gamma-BHC)	23	
	Linuron	21	
	Malathion	128	
	Methiocarb	21	
	Methomyl	23	
	Methoxychlor	23	
	Methyl bromide (bromomethane)	202	
	Methyl parathion	128	
	Metolachlor	129	
	Metribuzin	129	
	Molinate	130	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea	6	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea	6	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Orange	Chemical	Wells Sampled	Wells with Detections
	Naphthalene	201	
	Napropamide	1	
	Norflurazon	6	
	Ortho-dichlorobenzene	206	
	Oxamyl	23	
	Paraquat dichloride	23	
	Parathion or ethyl parathion	128	
	Permethrin	1	
	Picloram	22	
	Prometon	129	
	Prometryn	129	
	Propachlor	129	
	Propazine	1	
	Propoxur	21	
	Simazine	131	4
	Simetryn	1	
	Tebuthiuron	6	
	Terbutryn	1	
	Thiobencarb	130	
	Toxaphene	23	
	Triadimefon	1	
	Trichlorobenzenes	202	
	Trifluralin	1	
	Vernolate	1	
	Xylene	206	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Placer	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	11	
	1,2,4-Trichlorobenzene	10	
	1,2-D + 1,3-D + C-3 compounds	4	
	1,2-Dichloropropane (propylene dichloride)	11	1
	Benzene (benzol)	12	1
	Chloromethane (methyl chloride)	5	
	Methyl bromide (bromomethane)	4	
	Naphthalene	1	
	Ortho-dichlorobenzene	11	
	Thiobencarb	3	
	Trichlorobenzenes	4	
	Xylene	9	

Plumas	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 (propylene dichloride)	3	
	1,3-Dichloropropene (1,3-D, telone)	1	
	Benzene (benzol)	3	
	Chloromethane (methyl chloride)	3	
	DBCP	1	
	Ethylene dibromide	1	
	Methyl bromide (bromomethane)	3	
	Naphthalene	3	
	Ortho-dichlorobenzene	3	
	Trichlorobenzenes	3	
	Xylene	3	

Riverside	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	139	
	1,2,4-Trichlorobenzene	139	
	1,2-D + 1,3-D + C-3 compounds	87	
	1,2-Dichloropropane (propylene dichloride)	139	
	1,3-Dichloropropene (1,3-D, telone)	86	
	2,3,7,8-TCDD (dioxin)	40	
	2,4,5-TP (silvex)	41	
	2,4-D	41	
	2-Dimethylethyl-5-amino-1,3,4-thiadiazole	3	
	2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole	3	
	3-Hydroxycarbofuran	41	
	4(2,4-DB), dimethylamine salt	3	
	ACET (deethyl-simazine or deisopropyl-atrazine)	3	2
	Acetochlor	1	
	Acifluorfen, sodium salt	3	
	Alachlor	58	
	Aldicarb	41	
	Aldicarb sulfone	41	
	Aldicarb sulfoxide	41	
	Aldrin	27	
	Atrazine	118	1
	Bentazon, sodium salt	41	
	Benzene (benzol)	139	
	BHC (other than gamma isomer)	3	
	Bromacil	7	2
	Butachlor	38	
	Carbaryl	41	
	Carbofuran	42	
	Chlordane	41	
	Chloromethane (methyl chloride)	87	
	Chlorothalonil	3	
	Chlorthal-dimethyl (dacthal / DCPA)	3	
	Chlorthal-dimethyl acid degradates	14	
	Dalapon	41	
	DBCP	92	11
	DDD	3	
	DDE	3	
	DDT	3	
	Deethyl-atrazine (DEA)	3	1
	Desmethylnorflurazon	3	
	Diaminochlorotriazine (DACT)	3	2

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Riverside	Chemical	Wells Sampled	Wells with Detections
	Diazinon	38	
	Dicamba	40	
	Dichlorprop, butoxyethanol ester	3	
	Dieldrin	27	
	Dimethoate	4	
	Dinoseb	41	
	Diquat dibromide	38	
	Diuron	5	2
	Endosulfan	3	
	Endosulfan sulfate	3	
	Endothall	39	
	Endrin	41	
	Endrin aldehyde	3	
	Ethylene dibromide	92	
	Glyphosate, isopropylamine salt	44	
	Heptachlor	41	
	Heptachlor epoxide	41	
	Hexachlorobenzene	41	
	Hexazinone	3	
	Lindane (gamma-BHC)	41	
	Methiocarb	28	
	Methomyl	41	
	Methoxychlor	41	
	Methyl bromide (bromomethane)	87	
	Metolachlor	38	
	Metribuzin	38	
	Molinate	58	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea	3	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea	3	
	Naphthalene	87	
	Norflurazon	3	
	Ortho-dichlorobenzene	139	
	Oxamyl	42	
	Paraquat dichloride	13	
	Picloram	41	
	Prometon	6	
	Prometryn	37	
	Propachlor	27	
	Propoxur	28	
	Simazine	118	2

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Riverside	Chemical	Wells Sampled	Wells with Detections
	Tebuthiuron	3	
	Terbacil	1	
	Thiobencarb	58	
	Toxaphene	41	
	Trichlorobenzenes	87	
	Trifluralin	3	
	Xylene	139	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Sacramento	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	126	
	1,2,4-Trichlorobenzene	123	
	1,2-D + 1,3-D + C-3 compounds	78	
	1,2-Dichloropropane (propylene dichloride)	126	
	1,3-Dichloropropene (1,3-D, telone)	90	
	2,3,7,8-TCDD (dioxin)	6	
	2,4,5-T	8	
	2,4,5-TP (silvex)	12	
	2,4-D	12	
	3-Hydroxycarbofuran	21	
	4(2,4-DB), dimethylamine salt	4	
	Acifluorfen, sodium salt	4	
	Alachlor	21	
	Aldicarb	21	
	Aldicarb sulfone	21	
	Aldicarb sulfoxide	21	
	Aldrin	17	
	Atrazine	23	
	Bentazon, sodium salt	12	
	Benzene (benzol)	126	
	Bromacil	16	
	Butachlor	19	
	Carbaryl	18	
	Carbofuran	21	
	Carbon disulfide	5	
	Chlordane	12	
	Chloromethane (methyl chloride)	104	1
	Chlorothalonil	4	
	Chlorthal-dimethyl acid degradates	8	
	Dalapon	12	
	DBCP	17	2
	DDT	3	
	Diazinon	16	
	Dicamba	12	
	Dichlorprop, butoxyethanol ester	4	
	Dieldrin	10	
	Dimethoate	16	
	Dinoseb	12	
	Diquat dibromide	21	
	Diuron	1	
	Endothall	21	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Sacramento	Chemical	Wells Sampled	Wells with Detections
	Endrin	21	
	Ethylene dibromide	16	1
	Glyphosate, isopropylamine salt	21	
	Heptachlor	12	
	Heptachlor epoxide	12	
	Hexachlorobenzene	23	
	Lindane (gamma-BHC)	21	
	Methiocarb	4	
	Methomyl	21	
	Methoxychlor	21	
	Methyl bromide (bromomethane)	72	
	Metolachlor	19	
	Metribuzin	19	
	Molinate	23	
	Naphthalene	78	
	Ortho-dichlorobenzene	126	
	Oxamyl	21	
	Paraquat dichloride	1	
	Picloram	12	
	Propachlor	19	
	Simazine	23	
	Thiobencarb	36	
	Toxaphene	12	
	Trichlorobenzenes	116	
	Trifluralin	4	
	Xylene	126	1

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Benito	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 (propylene dichloride)	3	
	1,3-Dichloropropene (1,3-D, telone)	3	
	2,4,5-T	4	
	2,4,5-TP (silvex)	4	
	2,4-D	4	
	3-Hydroxycarbofuran	3	
	Acrylonitrile	1	
	Alachlor	4	
	Aldicarb	3	
	Aldicarb sulfone	3	
	Aldicarb sulfoxide	3	
	Atrazine	4	
	Bentazon, sodium salt	4	
	Benzene (benzol)	3	
	Bromacil	4	
	Butachlor	4	
	Carbaryl	1	
	Carbofuran	3	
	Carbon disulfide	1	
	Chloromethane (methyl chloride)	3	
	Dalapon	4	
	Diazinon	1	
	Dicamba	4	
	Dimethoate	4	
	Dinoseb	4	
	Diquat dibromide	4	
	Methomyl	3	
	Methyl bromide (bromomethane)	3	
	Metolachlor	4	
	Metribuzin	4	
	Molinate	4	
	Naphthalene	3	
	Ortho-dichlorobenzene	3	
	Oxamyl	3	
	Picloram	4	
	Propachlor	4	
	Simazine	4	
	Thiobencarb	4	
	Trichlorobenzenes	3	
	Xylene	3	

San Bernardino	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	195	
	1,2,4-Trichlorobenzene	195	
	1,2-D + 1,3-D + C-3 compounds	138	
	1,2-Dichloropropane (propylene dichloride)	195	
	1,3-Dichloropropene (1,3-D, telone)	62	
	2,3,7,8-TCDD (dioxin)	72	
	2,4,5-T	1	
	2,4,5-TP (silvex)	70	
	2,4-D	70	
	2-Dimethylethyl-5-amino-1,3,4-thiadiazole	5	
	2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole	5	
	3-Hydroxycarbofuran	57	
	4(2,4-DB), dimethylamine salt	7	
	ACET (deethyl-simazine or deisopropyl-atrazine)	5	1
	Acetochlor	11	
	Acifluorfen, sodium salt	7	
	Alachlor	81	
	Aldicarb	57	
	Aldicarb sulfone	57	
	Aldicarb sulfoxide	57	
	Aldrin	54	
	Atrazine	87	
	Bentazon, sodium salt	70	
	Benzene (benzol)	195	
	BHC (other than gamma isomer)	7	
	Bromacil	25	2
	Butachlor	53	
	Carbaryl	57	
	Carbofuran	76	
	Carbon disulfide	1	
	Chlordane	71	
	Chloromethane (methyl chloride)	138	1
	Chlorothalonil	12	
	Chlorthal-dimethyl (dacthal / DCPA)	7	
	Chlorthal-dimethyl acid degradates	19	1
	Dalapon	70	
	DBCP	191	37
	DDD	7	
	DDE	7	
	DDT	7	
	Deethyl-atrazine (DEA)	5	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Bernardino	Chemical	Wells Sampled	Wells with Detections
	Desmethylnorflurazon	5	
	Diaminochlorotriazine (DACT)	5	1
	Diazinon	53	
	Dicamba	51	
	Dichlorprop, butoxyethanol ester	7	
	Dieldrin	54	
	Dimethoate	20	
	Dinoseb	70	
	Diquat dibromide	77	
	Diuron	9	1
	Endosulfan	7	
	Endosulfan sulfate	7	
	Endothall	76	
	Endrin	71	
	Endrin aldehyde	7	
	Ethylene dibromide	177	
	Glyphosate, isopropylamine salt	76	
	Heptachlor	71	
	Heptachlor epoxide	71	
	Hexachlorobenzene	72	
	Hexazinone	5	
	Lindane (gamma-BHC)	71	
	Methiocarb	37	
	Methomyl	57	
	Methoxychlor	71	
	Methyl bromide (bromomethane)	138	
	Metolachlor	53	
	Metribuzin	53	
	Molinate	82	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea	5	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea	5	
	Naphthalene	138	
	Norflurazon	5	
	Ortho-dichlorobenzene	195	
	Oxamyl	76	
	Paraquat dichloride	2	
	Picloram	70	
	Prometon	12	
	Prometryn	44	
	Propachlor	49	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Bernardino	Chemical	Wells Sampled	Wells with Detections
	Propoxur	37	
	Simazine	99	1
	Tebuthiuron	5	
	Terbacil	11	
	Thiobencarb	83	
	Toxaphene	71	
	Trichlorobenzenes	138	
	Trifluralin	8	
	Xylene	195	

San Diego	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	32	
	1,2,4-Trichlorobenzene	32	
	1,2-D + 1,3-D + C-3 compounds	32	
	1,2-Dichloropropane (propylene dichloride)	32	
	1,3-Dichloropropene (1,3-D, telone)	8	
	2,3,7,8-TCDD (dioxin)	6	
	2,4,5-T	2	
	2,4,5-TP (silvex)	15	
	2,4-D	15	
	2-Dimethylethyl-5-amino-1,3,4-thiadiazole	12	
	2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole	12	
	3-Hydroxycarbofuran	16	
	4(2,4-DB), dimethylamine salt	11	
	ACET (deethyl-simazine or deisopropyl-atrazine)	12	
	Acifluorfen, sodium salt	11	
	Alachlor	16	
	Aldicarb	16	
	Aldicarb sulfone	16	
	Aldicarb sulfoxide	16	
	Aldrin	14	
	Atrazine	29	1
	Bentazon, sodium salt	15	
	Benzene (benzol)	32	
	BHC (other than gamma isomer)	9	
	Bromacil	23	
	Butachlor	13	
	Carbaryl	14	
	Carbofuran	17	
	Chlordane	14	
	Chloromethane (methyl chloride)	32	
	Chlorothalonil	9	
	Chlorthal-dimethyl (dacthal / DCPA)	9	
	Chlorthal-dimethyl acid degradates	4	
	Dalapon	15	
	DBCP	16	
	DDD	9	
	DDE	9	
	DDT	11	
	Deethyl-atrazine (DEA)	12	1
	Desmethylnorflurazon	12	
	Diaminochlorotriazine (DACT)	12	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Diego	Chemical	Wells Sampled	Wells with Detections
	Diazinon	11	
	Dicamba	14	
	Dichlorprop, butoxyethanol ester	11	
	Dieldrin	13	
	Dimethoate	11	
	Dinoseb	15	
	Diquat dibromide	8	
	Diuron	12	
	Endosulfan	9	
	Endosulfan sulfate	9	
	Endothall	8	
	Endrin	14	
	Endrin aldehyde	9	
	Ethylene dibromide	16	
	Glyphosate, isopropylamine salt	17	
	Heptachlor	14	
	Heptachlor epoxide	14	
	Hexachlorobenzene	15	
	Hexazinone	12	
	Lindane (gamma-BHC)	15	
	Methiocarb	11	
	Methomyl	16	
	Methoxychlor	14	
	Methyl bromide (bromomethane)	32	
	Metolachlor	13	
	Metribuzin	13	
	Molinate	15	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea	12	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea	12	
	Naphthalene	32	
	Norflurazon	12	
	Ortho-dichlorobenzene	32	
	Oxamyl	17	
	Picloram	15	
	Prometon	21	
	Prometryn	9	
	Propachlor	13	
	Propoxur	9	
	Simazine	29	
	Tebuthiuron	12	4

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Diego	Chemical	Wells Sampled	Wells with Detections
	Thiobencarb	16	
	Toxaphene	15	
	Trichlorobenzenes	32	
	Trifluralin	9	
	Xylene	32	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Joaquin	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	66	
	1,2,4-Trichlorobenzene	66	
	1,2-D + 1,3-D + C-3 compounds	47	
	1,2-Dichloropropane (propylene dichloride)	66	
	1,3-Dichloropropene (1,3-D, telone)	30	
	2,4,5-TP (silvex)	5	
	2,4-D	5	
	2-Dimethylethyl-5-amino-1,3,4-thiadiazole	4	
	2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole	4	
	3-Hydroxycarbofuran	5	
	ACET (deethyl-simazine or deisopropyl-atrazine)	14	3
	Alachlor	14	
	Aldicarb	4	
	Aldicarb sulfone	5	
	Aldicarb sulfoxide	5	
	Aldrin	5	
	Atrazine	28	
	Bentazon, sodium salt	5	
	Benzene (benzol)	66	
	Bromacil	28	
	Butachlor	14	
	Carbaryl	5	
	Carbofuran	5	
	Chlordane	5	
	Chloromethane (methyl chloride)	38	
	Chlorothalonil	5	
	Chlorthal-dimethyl (dacthal / DCPA)	4	
	Dalapon	5	
	DBCP	49	20
	Deethyl-atrazine (DEA)	14	
	Desmethylnorflurazon	14	3
	Diaminochlorotriazine (DACT)	14	6
	Diazinon	7	
	Dicamba	5	
	Dichlorprop, butoxyethanol ester	4	
	Dieldrin	5	
	Dimethoate	14	
	Dinoseb	5	
	Diquat dibromide	5	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Joaquin	Chemical	Wells Sampled	Wells with Detections
	Diuron	14	2
	Endothall	5	
	Endrin	5	
	EPTC	5	
	Ethylene dibromide	47	1
	Heptachlor	5	
	Heptachlor epoxide	5	
	Hexachlorobenzene	7	1
	Hexazinone	14	
	Lindane (gamma-BHC)	5	
	Methiocarb	5	
	Methomyl	5	
	Methoxychlor	5	
	Methyl bromide (bromomethane)	38	
	Metolachlor	16	
	Metribuzin	14	
	Molinate	14	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea	4	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea	4	
	Naphthalene	34	
	Napropamide	10	
	Norflurazon	14	1
	Ortho-dichlorobenzene	66	
	Oryzalin	10	
	Oxamyl	5	
	Picloram	5	
	Prometon	15	
	Prometryn	5	
	Propachlor	14	
	Propoxur	5	
	Simazine	28	3
	Tebuthiuron	4	
	Terbacil	5	
	Thiobencarb	14	
	Toxaphene	5	
	Trichlorobenzenes	49	
	Trifluralin	5	
	Xylene	66	

San Luis Obispo	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	47	
	1,2,4-Trichlorobenzene	47	
	1,2-D + 1,3-D + C-3 compounds	15	
	1,2-Dichloropropane (propylene dichloride)	47	
	1,3-Dichloropropene (1,3-D, telone)	1	
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	1	
	4(2,4-DB), dimethylamine salt	1	
	Acifluorfen, sodium salt	1	
	Alachlor	5	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Aldrin	1	
	Atrazine	21	
	Bentazon, sodium salt	1	
	Benzene (benzol)	47	
	BHC (other than gamma isomer)	1	
	Bromacil	2	
	Butachlor	2	
	Carbaryl	1	
	Carbofuran	1	
	Chlordane	1	
	Chloromethane (methyl chloride)	15	
	Chlorothalonil	1	
	Chlorthal-dimethyl (dacthal / DCPA)	1	
	Dalapon	1	
	DBCP	5	
	DDD	1	
	DDE	1	
	DDT	1	
	Diazinon	1	
	Dicamba	1	
	Dichlorprop, butoxyethanol ester	1	
	Dieldrin	1	
	Dimethoate	2	
	Dinoseb	1	
	Diquat dibromide	1	
	Endosulfan	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Luis Obispo	Chemical	Wells Sampled	Wells with Detections
	Endosulfan sulfate	1	
	Endothall	1	
	Endrin	1	
	Endrin aldehyde	1	
	Ethylene dibromide	5	
	Glyphosate, isopropylamine salt	1	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	2	
	Lindane (gamma-BHC)	1	
	Methiocarb	1	
	Methomyl	1	
	Methoxychlor	1	
	Methyl bromide (bromomethane)	15	
	Metolachlor	2	
	Metribuzin	2	
	Molinate	5	
	Naphthalene	15	
	Ortho-dichlorobenzene	47	
	Oxamyl	1	
	Picloram	1	
	Prometryn	1	
	Propachlor	3	
	Propoxur	1	
	Simazine	21	
	Thiobencarb	6	
	Toxaphene	1	
	Trichlorobenzenes	15	
	Trifluralin	1	
	Xylene	47	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Mateo	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	20	
	1,2,4-Trichlorobenzene	20	
	1,2-D + 1,3-D + C-3 compounds	16	
	1,2-Dichloropropane (propylene dichloride)	20	1
	1,3-Dichloropropene (1,3-D, telone)	13	
	2,3,7,8-TCDD (dioxin)	11	
	2,4,5-T	11	
	2,4,5-TP (silvex)	14	
	2,4-D	14	
	3-Hydroxycarbofuran	13	
	4(2,4-DB), dimethylamine salt	4	
	Acifluorfen, sodium salt	4	
	Acrylonitrile	5	
	Alachlor	14	
	Aldicarb	13	
	Aldicarb sulfone	13	
	Aldicarb sulfoxide	13	
	Aldrin	12	
	Atrazine	14	
	Bentazon, sodium salt	14	
	Benzene (benzol)	20	
	BHC (other than gamma isomer)	4	
	Bromacil	12	
	Butachlor	12	
	Carbaryl	13	
	Carbofuran	13	
	Carbon disulfide	6	
	Chlordane	14	
	Chlorobenzilate	4	
	Chloromethane (methyl chloride)	11	
	Chloroneb	4	
	Chlorothalonil	11	
	Chlorthal-dimethyl acid degradates	7	
	Dalapon	14	
	DBCP	15	
	DDD	4	
	DDE	4	
	DDT	4	
	Diazinon	8	
	Dicamba	14	
	Dichlorprop, butoxyethanol ester	4	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Mateo	Chemical	Wells Sampled	Wells with Detections
	Dieldrin	12	
	Dimethoate	12	
	Dinoseb	14	
	Diquat dibromide	14	1
	Diuron	5	
	Endosulfan	4	
	Endosulfan sulfate	4	
	Endothall	14	
	Endrin	14	
	Endrin aldehyde	4	
	Ethylene dibromide	15	
	Glyphosate, isopropylamine salt	14	
	Heptachlor	14	
	Heptachlor epoxide	14	
	Hexachlorobenzene	14	
	Lindane (gamma-BHC)	14	
	Methiocarb	4	
	Methomyl	13	
	Methoxychlor	14	
	Methyl bromide (bromomethane)	10	
	Metolachlor	12	
	Metribuzin	12	
	Molinate	14	
	Naphthalene	16	
	Ortho-dichlorobenzene	20	
	Oxamyl	13	
	Paraquat dichloride	2	
	Permethrin	4	
	Permethrin, other related compounds	4	
	Picloram	14	
	Prometryn	4	
	Propachlor	12	
	Propoxur	4	
	Simazine	14	
	Thiobencarb	14	
	Toxaphene	14	
	Trichlorobenzenes	17	
	Trifluralin	11	
	Xylene	20	

Santa Barbara	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	30	
	1,2,4-Trichlorobenzene	30	
	1,2-D + 1,3-D + C-3 compounds	18	
	1,2-Dichloropropane (propylene dichloride)	30	
	1,3-Dichloropropene (1,3-D, telone)	12	
	2,3,7,8-TCDD (dioxin)	7	
	2,4,5-T	1	
	2,4,5-TP (silvex)	7	
	2,4-D	7	
	3-Hydroxycarbofuran	6	
	Alachlor	8	
	Aldicarb	6	
	Aldicarb sulfone	6	
	Aldicarb sulfoxide	6	
	Aldrin	7	
	Atrazine	8	
	Bentazon, sodium salt	7	
	Benzene (benzol)	32	
	Bromacil	1	
	Butachlor	1	
	Carbaryl	6	
	Carbofuran	6	
	Chlordane	7	
	Chloromethane (methyl chloride)	18	
	Chlorthal-dimethyl acid degradates	6	
	Dalapon	7	
	DBCP	8	
	Diazinon	1	
	Dicamba	7	
	Dieldrin	7	
	Dimethoate	1	
	Dinoseb	7	
	Diquat dibromide	7	
	Diuron	1	
	Endothall	7	
	Endrin	7	
	Ethylene dibromide	8	
	Glyphosate, isopropylamine salt	7	
	Heptachlor	7	
	Heptachlor epoxide	7	
	Hexachlorobenzene	7	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Santa Barbara	Chemical	Wells Sampled	Wells with Detections
	Lindane (gamma-BHC)	7	
	Methomyl	6	
	Methoxychlor	7	
	Methyl bromide (bromomethane)	18	
	Metolachlor	1	
	Metribuzin	1	
	Molinate	7	
	Naphthalene	18	
	Ortho-dichlorobenzene	30	
	Oxamyl	6	
	Picloram	7	
	Prometryn	1	
	Propachlor	1	
	Simazine	8	
	Thiobencarb	7	
	Toxaphene	7	
	Trichlorobenzenes	18	
	Xylene	32	

Santa Clara	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	143	
	1,2,4-Trichlorobenzene	143	
	1,2-D + 1,3-D + C-3 compounds	131	
	1,2-Dichloropropane (propylene dichloride)	143	
	1,3-Dichloropropene (1,3-D, telone)	21	
	2,3,7,8-TCDD (dioxin)	29	
	2,4,5-T	2	
	2,4,5-TP (silvex)	30	
	2,4-D	30	
	3-Hydroxycarbofuran	29	
	ACET (deethyl-simazine or deisopropyl-atrazine)	7	
	Alachlor	34	
	Aldicarb	29	
	Aldicarb sulfone	29	
	Aldicarb sulfoxide	29	
	Aldrin	29	
	Atrazine	42	
	Bentazon, sodium salt	30	
	Benzene (benzol)	143	
	Bromacil	30	
	Butachlor	23	
	Carbaryl	29	
	Carbofuran	29	
	Chlordane	37	
	Chloromethane (methyl chloride)	57	1
	Chlorothalonil	9	
	Chlorthal-dimethyl acid degradates	28	
	Dalapon	30	
	DBCP	37	
	Deethyl-atrazine (DEA)	7	
	Desmethylnorflurazon	7	
	Diaminochlorotriazine (DACT)	7	
	Diazinon	22	
	Dicamba	30	
	Dieldrin	26	
	Dimethoate	23	
	Dinoseb	30	
	Diquat dibromide	29	
	Diuron	25	
	Endothall	29	
	Endrin	40	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Santa Clara	Chemical	Wells Sampled	Wells with Detections
	Ethylene dibromide	37	
	Glyphosate, isopropylamine salt	29	
	Heptachlor	37	
	Heptachlor epoxide	37	
	Hexachlorobenzene	47	
	Hexazinone	7	
	Lindane (gamma-BHC)	40	
	Methiocarb	10	
	Methomyl	29	
	Methoxychlor	40	
	Methyl bromide (bromomethane)	57	
	Metolachlor	23	
	Metribuzin	23	
	Molinate	35	
	Naphthalene	131	1
	Napropamide	7	
	Norflurazon	7	
	Ortho-dichlorobenzene	143	
	Oryzalin	7	
	Oxamyl	29	
	Paraquat dichloride	11	
	Picloram	30	
	Prometon	7	
	Propachlor	23	
	Propoxur	10	
	Simazine	42	
	Thiobencarb	38	
	Toxaphene	37	
	Trichlorobenzenes	131	1
	Trifluralin	9	
	Xylene	143	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Santa Cruz	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	12	
	1,2,4-Trichlorobenzene	12	
	1,2-D + 1,3-D + C-3 compounds	10	
	1,2-Dichloropropane (propylene dichloride)	12	
	1,3-Dichloropropene (1,3-D, telone)	6	
	2,3,7,8-TCDD (dioxin)	3	
	2,4,5-T	2	
	2,4,5-TP (silvex)	9	
	2,4-D	9	
	3-Hydroxycarbofuran	5	
	Acrylonitrile	1	
	Alachlor	11	
	Aldicarb	5	
	Aldicarb sulfone	5	
	Aldicarb sulfoxide	5	
	Aldrin	9	
	Atrazine	12	
	Bentazon, sodium salt	9	
	Benzene (benzol)	12	1
	Bromacil	11	
	Butachlor	11	
	Carbaryl	4	
	Carbofuran	5	
	Carbon disulfide	3	
	Chlordane	3	
	Chloromethane (methyl chloride)	10	
	Chlorothalonil	1	
	Chlorthal-dimethyl acid degradates	7	
	Dalapon	9	
	DBCP	6	
	Diazinon	11	
	Dicamba	9	
	Dieldrin	3	
	Dimethoate	11	
	Dinoseb	9	
	Diquat dibromide	9	
	Endothall	4	
	Endrin	9	
	Ethylene dibromide	5	
	Glyphosate, isopropylamine salt	3	
	Heptachlor	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Santa Cruz	Chemical	Wells Sampled	Wells with Detections
	Heptachlor epoxide	3	
	Hexachlorobenzene	10	
	Lindane (gamma-BHC)	9	
	Methomyl	5	
	Methoxychlor	9	
	Methyl bromide (bromomethane)	10	
	Metolachlor	11	
	Metribuzin	11	
	Molinate	12	
	Naphthalene	10	
	Ortho-dichlorobenzene	12	
	Oxamyl	5	
	Paraquat dichloride	3	
	Picloram	9	
	Propachlor	11	
	Simazine	12	
	Thiobencarb	12	
	Toxaphene	3	
	Trichlorobenzenes	10	
	Trifluralin	1	
	Xylene	12	

Shasta	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	25	
	1,2,4-Trichlorobenzene	25	
	1,2-D + 1,3-D + C-3 compounds	23	
	1,2-Dichloropropane (propylene dichloride)	25	
	1,3-Dichloropropene (1,3-D, telone)	2	
	Benzene (benzol)	25	1
	Chloromethane (methyl chloride)	23	
	Methyl bromide (bromomethane)	23	
	Naphthalene	1	
	Ortho-dichlorobenzene	25	
	Trichlorobenzenes	23	
	Xylene	25	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Siskiyou	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	11	
	1,2,4-Trichlorobenzene	11	
	1,2-D + 1,3-D + C-3 compounds	11	
	1,2-Dichloropropane (propylene dichloride)	11	
	1,3-Dichloropropene (1,3-D, telone)	1	
	Benzene (benzol)	11	
	Chloromethane (methyl chloride)	11	
	DBCP	1	
	Ethylene dibromide	1	
	Methyl bromide (bromomethane)	11	
	Naphthalene	1	
	Ortho-dichlorobenzene	11	
	Trichlorobenzenes	11	
	Xylene	11	

Solano	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	12	
	1,2,4-Trichlorobenzene	12	
	1,2-D + 1,3-D + C-3 compounds	10	
	1,2-Dichloropropane (propylene dichloride)	12	
	1,3-Dichloropropene (1,3-D, telone)	3	
	2,4,5-T	3	
	2,4,5-TP (silvex)	3	
	2,4-D	3	
	2-Dimethylethyl-5-amino-1,3,4-thiadiazole	5	
	2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole	5	
	3-Hydroxycarbofuran	1	
	ACET (deethyl-simazine or deisopropyl-atrazine)	24	5
	Alachlor	3	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Aldrin	3	
	Atrazine	27	7
	Bentazon, sodium salt	3	
	Benzene (benzol)	13	
	Bromacil	27	
	Butachlor	3	
	Carbaryl	1	
	Carbofuran	1	
	Carbon disulfide	1	
	Chlordane	3	
	Chloromethane (methyl chloride)	6	
	Chlorothalonil	1	
	Dalapon	3	
	DBCP	3	
	Deethyl-atrazine (DEA)	24	6
	Desmethylnorflurazon	24	1
	Diaminochlorotriazine (DACT)	24	5
	Diazinon	3	
	Dicamba	3	
	Dieldrin	3	
	Dimethoate	3	
	Dinoseb	3	
	Diquat dibromide	3	
	Diuron	25	1
	Endothall	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Solano	Chemical	Wells Sampled	Wells with Detections
	Endrin	3	
	Ethylene dibromide	3	
	Glyphosate, isopropylamine salt	1	
	Heptachlor	3	
	Heptachlor epoxide	3	
	Hexachlorobenzene	3	
	Hexazinone	24	1
	Lindane (gamma-BHC)	3	
	Methomyl	1	
	Methoxychlor	3	
	Methyl bromide (bromomethane)	6	
	Metolachlor	3	
	Metribuzin	3	
	Molinate	3	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea	5	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea	5	
	Naphthalene	10	
	Norflurazon	24	1
	Ortho-dichlorobenzene	12	
	Oxamyl	1	
	Picloram	3	
	Prometon	24	
	Prometryn	2	
	Propachlor	3	
	Simazine	27	1
	Tebuthiuron	5	1
	Thiobencarb	3	
	Toxaphene	3	
	Trichlorobenzenes	10	
	Trifluralin	1	
	Xylene	13	

Sonoma	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	27	
	1,2,4-Trichlorobenzene	27	
	1,2-D + 1,3-D + C-3 compounds	27	
	1,2-Dichloropropane (propylene dichloride)	27	
	1,3-Dichloropropene (1,3-D, telone)	13	
	2,3,7,8-TCDD (dioxin)	6	
	2,4,5-T	40	
	2,4,5-TP (silvex)	49	
	2,4-D	49	
	3-Hydroxycarbofuran	31	
	4(2,4-DB), dimethylamine salt	30	
	Acifluorfen, sodium salt	9	
	Acrylonitrile	11	
	Alachlor	37	
	Aldicarb	31	
	Aldicarb sulfone	31	
	Aldicarb sulfoxide	31	
	Aldrin	28	
	Atrazine	46	
	Bentazon, sodium salt	49	
	Benzene (benzol)	28	
	BHC (other than gamma isomer)	7	
	Bromacil	27	
	Butachlor	27	
	Carbaryl	30	
	Carbofuran	31	
	Carbon disulfide	12	
	Chlordane	28	
	Chlorobenzilate	7	
	Chloromethane (methyl chloride)	26	4
	Chloroneb	7	
	Chlorothalonil	11	
	Chlorthal-dimethyl acid degradates	18	
	Dalapon	49	
	DBCP	24	
	DDD	7	
	DDE	7	
	DDT	7	
	Diazinon	14	
	Dicamba	49	
	Dichlorprop, butoxyethanol ester	9	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Sonoma	Chemical	Wells Sampled	Wells with Detections
	Dieldrin	28	
	Dimethoate	27	
	Dinoseb	49	
	Diquat dibromide	44	
	Diuron	6	
	Endosulfan	7	
	Endosulfan sulfate	7	
	Endothall	41	
	Endrin	28	
	Endrin aldehyde	7	
	Ethylene dibromide	30	
	Glyphosate, isopropylamine salt	6	
	Heptachlor	28	
	Heptachlor epoxide	28	
	Hexachlorobenzene	19	
	Lindane (gamma-BHC)	28	
	Methiocarb	14	
	Methomyl	31	
	Methoxychlor	28	
	Methyl bromide (bromomethane)	26	2
	Metolachlor	27	
	Metribuzin	27	
	Molinate	27	
	Naphthalene	17	
	Ortho-dichlorobenzene	27	
	Oxamyl	43	
	Permethrin	7	
	Permethrin, other related compounds	7	
	Picloram	49	
	Prometryn	17	
	Propachlor	27	
	Propoxur	14	
	Simazine	46	
	Thiobencarb	27	
	Toxaphene	28	
	Trichlorobenzenes	27	
	Trifluralin	11	
	Xylene	28	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Stanislaus	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	106	
	1,2,4-Trichlorobenzene	106	
	1,2-D + 1,3-D + C-3 compounds	106	
	1,2-Dichloropropane (propylene dichloride)	106	
	1,3-Dichloropropene (1,3-D, telone)	98	
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-T	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	2	
	ACET (deethyl-simazine or deisopropyl-atrazine)	25	2
	Alachlor	11	
	Aldicarb	2	
	Aldicarb sulfone	2	
	Aldicarb sulfoxide	2	
	Aldrin	1	
	Atrazine	36	1
	Bentazon, sodium salt	1	
	Benzene (benzol)	106	
	Bromacil	36	
	Butachlor	11	
	Carbaryl	2	
	Carbofuran	2	
	Carbon disulfide	2	
	Chlordane	1	
	Chloromethane (methyl chloride)	106	
	Chlorothalonil	1	
	Dalapon	1	
	DBCP	80	26
	Deethyl-atrazine (DEA)	25	1
	Desmethylnorflurazon	25	6
	Diaminochlorotriazine (DACT)	25	11
	Diazinon	6	
	Dicamba	1	
	Dieldrin	1	
	Dimethoate	11	
	Dinoseb	1	
	Diquat dibromide	1	
	Diuron	25	4
	Endothall	2	
	Endrin	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Stanislaus	Chemical	Wells Sampled	Wells with Detections
	Ethylene dibromide	74	
	Glyphosate, isopropylamine salt	1	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	1	
	Hexazinone	25	2
	Lindane (gamma-BHC)	1	
	Methomyl	2	
	Methoxychlor	1	
	Methyl bromide (bromomethane)	106	
	Metolachlor	11	
	Metribuzin	11	
	Molinate	11	
	Naphthalene	99	
	Napropamide	8	
	Norflurazon	25	3
	Ortho-dichlorobenzene	106	
	Oryzalin	8	
	Oxamyl	2	
	Picloram	1	
	Prometon	25	1
	Prometryn	1	
	Propachlor	10	
	Simazine	36	2
	Thiobencarb	15	
	Toxaphene	1	
	Trichlorobenzenes	106	
	Trifluralin	1	
	Xylene	106	

Sutter	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 (propylene dichloride)	3	
	1,3-Dichloropropene (1,3-D, telone)	1	
	Benzene (benzol)	3	
	Chloromethane (methyl chloride)	3	
	Methyl bromide (bromomethane)	3	
	Naphthalene	3	
	Ortho-dichlorobenzene	3	
	Trichlorobenzenes	3	
	Xylene	3	

Tehama	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	26	
	1,1,2,2-Tetrachloroethane	38	
	1,2,4-Trichlorobenzene	38	
	1,2-D + 1,3-D + C-3 compounds	38	
	1,2-Dichloropropane (propylene dichloride)	38	
	Benzene (benzol)	38	
	Chloromethane (methyl chloride)	38	
	Methyl bromide (bromomethane)	38	2
	Naphthalene	26	
	Ortho-dichlorobenzene	38	
	Trichlorobenzenes	38	
	Xylene	38	

Trinity	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	26	
	1,1,2,2-Tetrachloroethane	38	
	1,2,4-Trichlorobenzene	38	
	1,2-D + 1,3-D + C-3 compounds	38	
	1,2-Dichloropropane (propylene dichloride)	38	
	Benzene (benzol)	38	
	Chloromethane (methyl chloride)	38	
	Methyl bromide (bromomethane)	38	2
	Naphthalene	26	
	Ortho-dichlorobenzene	38	
	Trichlorobenzenes	38	
	Xylene	38	

Tulare	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	55	
	1,1,2,2-Tetrachloroethane	82	
	1,2,4-Trichlorobenzene	82	
	1,2-D + 1,3-D + C-3 compounds	81	
	1,2-Dichloropropane (propylene dichloride)	82	
	2,3,7,8-TCDD (dioxin)	6	
	2,4,5-T	12	
	2,4,5-TP (silvex)	12	
	2,4-D	12	
	3-Hydroxycarbofuran	12	
	ACET (deethyl-simazine or deisopropyl-atrazine)	57	40
	Alachlor	34	
	Aldicarb	12	
	Aldicarb sulfone	12	
	Aldicarb sulfoxide	12	
	Aldrin	12	
	Atrazine	91	1
	Bentazon, sodium salt	12	
	Benzene (benzol)	84	
	Bromacil	90	13
	Butachlor	33	
	Carbaryl	8	
	Carbofuran	12	
	Chlordane	13	
	Chloromethane (methyl chloride)	55	
	Chlorothalonil	11	
	Dalapon	12	
	DBCP	92	38
	Deethyl-atrazine (DEA)	57	3
	Desmethylnorflurazon	57	16
	Diaminochlorotriazine (DACT)	57	38
	Diazinon	13	
	Dicamba	12	
	Dieldrin	12	
	Dimethoate	33	
	Dinoseb	12	
	Diquat dibromide	11	
	Diuron	58	26
	Endothall	13	
	Endrin	13	
	Ethylene dibromide	89	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Tulare	Chemical	Wells Sampled	Wells with Detections
	Glyphosate, isopropylamine salt	12	
	Heptachlor	13	
	Heptachlor epoxide	13	
	Hexachlorobenzene	13	
	Hexazinone	57	
	Lindane (gamma-BHC)	13	
	Methomyl	12	
	Methoxychlor	13	
	Methyl bromide (bromomethane)	55	
	Metolachlor	33	
	Metribuzin	33	
	Molinate	33	
	Naphthalene	80	
	Napropamide	10	
	Norflurazon	57	11
	Ortho-dichlorobenzene	82	
	Oryzalin	10	
	Oxamyl	12	
	Picloram	12	
	Prometon	57	
	Prometryn	2	
	Propachlor	33	
	Simazine	91	28
	Thiobencarb	33	
	Toxaphene	13	
	Trichlorobenzenes	81	
	Trifluralin	11	
	Xylene	82	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Tuolumne	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	7	
	1,2,4-Trichlorobenzene	7	
	1,2-D + 1,3-D + C-3 compounds	7	
	1,2-Dichloropropane (propylene dichloride)	7	
	1,3-Dichloropropene (1,3-D, telone)	4	
	Alachlor	6	
	Atrazine	6	
	Benzene (benzol)	7	
	Bromacil	6	
	Butachlor	6	
	Chloromethane (methyl chloride)	7	
	Chlorothalonil	2	
	Diazinon	6	
	Dimethoate	6	
	Methyl bromide (bromomethane)	7	
	Metolachlor	6	
	Metribuzin	6	
	Molinate	6	
	Naphthalene	4	
	Ortho-dichlorobenzene	7	
	Prometryn	2	
	Propachlor	4	
	Simazine	6	
	Terbacil	2	
	Thiobencarb	6	
	Trichlorobenzenes	7	
	Xylene	7	

Ventura	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	26	
	1,2,4-Trichlorobenzene	26	
	1,2-D + 1,3-D + C-3 compounds	26	
	1,2-Dichloropropane (propylene dichloride)	26	
	1,3-Dichloropropene (1,3-D, telone)	26	
	2,3,7,8-TCDD (dioxin)	2	
	2,4,5-T	8	
	2,4,5-TP (silvex)	8	
	2,4-D	8	
	2-Dimethylethyl-5-amino-1,3,4-thiadiazole	4	
	2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole	4	
	3-Hydroxycarbofuran	9	
	ACET (deethyl-simazine or deisopropyl-atrazine)	4	
	Alachlor	12	
	Aldicarb	9	
	Aldicarb sulfone	9	
	Aldicarb sulfoxide	9	
	Aldrin	10	
	Atrazine	20	
	Bentazon, sodium salt	8	
	Benzene (benzol)	26	
	Bromacil	14	
	Butachlor	10	
	Carbaryl	9	
	Carbofuran	9	
	Chlordane	10	
	Chloromethane (methyl chloride)	26	
	Dalapon	8	
	DBCP	9	
	Deethyl-atrazine (DEA)	4	
	Desmethylnorflurazon	4	
	Diaminochlorotriazine (DACT)	4	
	Diazinon	10	
	Dicamba	8	
	Dieldrin	10	1
	Dimethoate	10	
	Dinoseb	8	
	Diquat dibromide	8	
	Diuron	7	
	Endrin	10	
	Ethylene dibromide	9	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Ventura	Chemical	Wells Sampled	Wells with Detections
	Glyphosate, isopropylamine salt	5	
	Heptachlor	10	
	Heptachlor epoxide	10	
	Hexachlorobenzene	10	
	Hexazinone	4	
	Lindane (gamma-BHC)	10	
	Methomyl	9	
	Methoxychlor	10	
	Methyl bromide (bromomethane)	26	
	Metolachlor	10	
	Metribuzin	10	
	Molinate	10	
	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)	4	
	Naphthalene	26	
	Norflurazon	4	
	Ortho-dichlorobenzene	26	
	Oxamyl	9	
	Paraquat dichloride	5	
	Picloram	8	
	Prometon	4	
	Prometryn	10	
	Propachlor	10	
	Simazine	20	
	Tebuthiuron	4	
	Thiobencarb	10	
	Toxaphene	10	
	Trichlorobenzenes	26	
	Xylene	26	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Yolo	Chemical	Wells Sampled	Wells with Detections
	1,1,2,2-Tetrachloroethane	23	
	1,2,4-Trichlorobenzene	22	
	1,2-D + 1,3-D + C-3 compounds	23	
	1,2-Dichloropropane (propylene dichloride)	23	
	1,3-Dichloropropene (1,3-D, telone)	22	
	2,3,7,8-TCDD (dioxin)	9	
	2,4,5-T	12	
	2,4,5-TP (silvex)	12	
	2,4-D	12	
	3-Hydroxycarbofuran	12	
	ACET (deethyl-simazine or deisopropyl-atrazine)	1	
	Alachlor	12	
	Aldicarb	12	
	Aldicarb sulfone	12	
	Aldicarb sulfoxide	12	
	Aldrin	13	
	Atrazine	13	
	Bentazon, sodium salt	12	
	Benzene (benzol)	23	
	Bromacil	13	
	Butachlor	12	
	Carbaryl	12	
	Carbofuran	12	
	Chlordane	13	
	Chloromethane (methyl chloride)	23	
	Chlorothalonil	13	
	Dalapon	12	
	DBCP	23	
	Deethyl-atrazine (DEA)	1	
	Desmethylnorflurazon	1	
	Diaminochlorotriazine (DACT)	1	
	Diazinon	12	
	Dicamba	12	
	Dieldrin	13	
	Dimethoate	12	
	Dinoseb	12	
	Diquat dibromide	11	
	Diuron	4	
	Endothall	11	
	Endrin	13	
	Ethylene dibromide	23	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Yolo	Chemical	Wells Sampled	Wells with Detections
	Glyphosate, isopropylamine salt	11	
	Heptachlor	13	
	Heptachlor epoxide	13	
	Hexachlorobenzene	13	
	Hexazinone	1	
	Lindane (gamma-BHC)	13	
	Methiocarb	3	
	Methomyl	12	
	Methoxychlor	13	
	Methyl bromide (bromomethane)	23	
	Metolachlor	12	
	Metribuzin	12	
	Molinate	12	
	Naphthalene	23	
	Napropamide	1	
	Norflurazon	1	
	Ortho-dichlorobenzene	23	
	Oryzalin	1	
	Oxamyl	12	
	Picloram	12	
	Prometon	1	
	Prometryn	3	
	Propachlor	12	
	Propoxur	3	
	Simazine	13	
	Thiobencarb	12	
	Toxaphene	13	
	Trichlorobenzenes	23	
	Trifluralin	10	
	Xylene	23	1

Yuba	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	11	
	1,2-Dichloropropane (propylene dichloride)	19	
	1,3-Dichloropropene (1,3-D, telone)	1	
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-T	3	
	2,4,5-TP (silvex)	3	
	2,4-D	6	
	3-Hydroxycarbofuran	1	
	Alachlor	1	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Aldrin	1	
	Atrazine	1	
	Bentazon, sodium salt	3	
	Benzene (benzol)	20	1
	Bromacil	1	
	Butachlor	1	
	Carbaryl	1	
	Carbofuran	1	
	Carbon disulfide	1	
	Chlordane	1	
	Chloromethane (methyl chloride)	4	
	Dalapon	3	
	DBCP	1	
	Diazinon	1	
	Dicamba	3	
	Dieldrin	1	
	Dimethoate	1	
	Dinoseb	3	
	Diquat dibromide	1	
	Diuron	1	
	Endothall	1	
	Endrin	1	
	Ethylene dibromide	1	
	Glyphosate, isopropylamine salt	6	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Yuba	Chemical	Wells Sampled	Wells with Detections
	Lindane (gamma-BHC)	1	
	Methomyl	1	
	Methoxychlor	1	
	Methyl bromide (bromomethane)	4	
	Metolachlor	1	
	Metribuzin	1	
	Molinate	3	
	Naphthalene	8	
	Ortho-dichlorobenzene	19	
	Oxamyl	1	
	Picloram	3	
	Prometryn	1	
	Propachlor	1	
	Simazine	4	
	Thiobencarb	3	
	Toxaphene	1	
	Trichlorobenzenes	11	
	Xylene	16	

Appendix F–Well Sampling Surveys Included in the 2008 Update Report

A summary of the well sampling surveys that were conducted by the reporting agencies for the reporting periods shown. The study number assigned by DPR is shown to the left. Surveys with no study number are designated "Memoramdum Only."

Summary of California Department of Public Health (Sanitary Engineering Branch) Mandated Ground Water Sampling Activities for calendar year 2007.

STUDY	COUNTY *Study type (italics)*	WELLS SAMPLED	SAMPLING DATES	CHEMICALS SAMPLED (UNDERLINE INDICATES A VERIFIED DETECTION)
0023	56 counties *Mandated sampling*	3,208 wells	January through December 2007	117 chemicals

B: Summary of Department Of Pesticide Regulation Ground Water Sampling Activities for FY 2007-2008.

STUDY	COUNTY *Study type (italics)*	WELLS SAMPLED	SAMPLING/ MEMORANDUM DATES	CHEMICALS SAMPLED (UNDERLINE INDICATES A VERIFIED DETECTION)
0440	Fresno/Tulare *Well network*	70 wells	April through May 2008	Atrazine, bromacil, simazine, diuron, prometon, hexazinone, norflurazon, DEA, ACET, DACT, desmethylnorflurazon
0570	Butte/Colusa/Fresno/ Glenn/Merced/San Joaquin/Santa Clara/ Stanislaus/Tulare /Yolo *Ground water monitoring for Napropamide and oryzalin*	74 wells	February through May 2006	Napropamide, oryzalin, atrazine, bromacil, simazine, diuron, prometon, hexazinone, norflurazon, DEA, ACET, DACT, desmethylnorflurazon
571	Kern *Four section survey*	1 well	October 2007	Alachlor, alachlor ESA, alachlor OXA, atrazine, bromacil, simazine, diuron, prometon, hexazinone, norflurazon, DEA, ACET, DACT, desmethylnorflurazon

Appendix F–Well Sampling Surveys Included in the 2008 Update Report, con't.

STUDY	COUNTY *Study type (italics)*	WELLS SAMPLED	SAMPLING/ MEMORANDUM DATES	CHEMICALS SAMPLED (UNDERLINE INDICATES A VERIFIED DETECTION)
0572	Butte/Colusa/Fresno/ Glenn/Kern/Madera/ Merced/Monterey/ Solano/Stanislaus/ Tulare *Transect monitoring survey outside GWPAs*	175 wells	January 2007 through June 2008	Atrazine, bromacil, simazine, diuron, prometon, hexazinone, norflurazon, DEA, ACET, DACT, desmethylnorflurazon
0573	Fresno/Kern *Four section survey*	10 wells	January 2008	Atrazine, bromacil, simazine, diuron, prometon, hexazinone, norflurazon, DEA, ACET, DACT, desmethylnorflurazon
0574	Los Angeles/Orange/ Riverside/San Bernardino/San Diego/San Joaquin/ Solano/Ventura *Ground water monitoring for tebuthiuron*	59 wells	April through June 2008	Tebuthiuron, four tebuthiuron degradates (104, 106, 107 and 108), atrazine, bromacil, simazine, diuron, prometon, hexazinone, norflurazon, DEA, ACET, DACT, desmethylnorflurazon
Memorandum Only	Los Angeles	0 wells Methyl bromide	December 2007	The well was sampled for CDPH and no methyl bromide residues were detected. The initial report is assumed to be erroneous.
Memorandum Only	San Mateo	0 wells Diquat dibromide	May 2007	The well was sampled for CDPH one month later and no Diquat dibromide residues were detected. The initial report is assumed to be erroneous.
Memorandum Only	Sonoma	0 wells Methyl bromide	February 2007	The well was sampled for CDPH and no methyl bromide residues were detected. The initial report is assumed to be erroneous.

Appendix F–Well Sampling Surveys Included in the 2008 Update Report, con't.

STUDY	COUNTY *Study type (italics)*	WELLS SAMPLED	SAMPLING/ MEMORANDUM DATES	CHEMICALS SAMPLED (UNDERLINE INDICATES A VERIFIED DETECTION)
Memorandum Only	Sonoma	0 wells Methyl bromide	March 2007	The well was sampled for CDPH and no methyl bromide residues were detected. The initial report is assumed to be erroneous.

Appendix G–Major Uses of Pesticides Detected in Ground Water by DPR

The major uses and total pounds applied in California in 2007 for each AI of the pesticides related products that had verified detections are summarized in the tables below (I-6 to I-13). All of the compounds listed are herbicides applied directly to the soil. Maximum contaminant levels (MCL), health advisory levels, integrated risk information system reference dose, and suggested no adverse response levels (SNARL) for each compound were obtained from the Central Valley Regional Water Quality Control Board's Compilation of Water Quality Goals, August 2007. Only the MCL provides an enforceable limit. The pesticide use information in the following tables was obtained from the 2006 pesticide use report database.

Atrazine

Atrazine is a selective herbicide primarily used for corn, sudangrass and forestry. This compound is listed on the 3CCR section 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 detected by DPR was 0.6 ppb. CDPH and U. S. EPA have established MCLs for atrazine at 1 and 3 ppb, respectively.

Atrazine use information for 2007

Site	Pounds
Sudangrass (forage–fodder)	10,193
Corn, human consumption	5,426
Forest trees, forest lands	4,870
Corn (forage–fodder)	3,129
Sugarcane	1,985
Sorghum/milo general	570
All other	1,373

Bromacil

Bromacil is a general herbicide for weed control in rights-of-way and a selective herbicide in citrus crops with the degree of selectivity increasing as application rates decrease. Bromacil is listed on the 3CCR section 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 5.2 ppb. No MCL has been established for bromacil. U. S. EPA has established a drinking water SNARL for bromacil at 70 ppb.

Bromacil use information for 2007

Site	Pounds
Rights Of Way	56,842
Orange (All or unspecified)	18,039
Lemon	3,108
Landscape Maintenance	2,536
Grapefruit	1,940
Tangelo	1,013
All other	1,619

Diuron

Diuron is a general herbicide for weed control in rights-of-way, and as a selective herbicide in alfalfa and citrus crops. Diuron is listed on the 3CCr section 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 1.08 ppb. No MCL has been established for diuron. The U.S. EPA SNARL for toxicity other than cancer risk is 21 ppb. The SNARL for cancer risk is 2 ppb.

Diuron use information for 2007

Site	Pounds
Rights Of Way	341,160
Alfalfa (Forage - Fodder)	187,305
Orange (All or unspecified)	137,411
Landscape Maintenance	42,254
Walnut (English Walnut, Persian Walnut	27,064
Cotton, general	20,945
All other	104,362

Hexazinone

Hexazinone is a selective herbicide used for weed control in alfalfa and forest trees. The highest residue level of hexazinone verified by DPR was 0.247 ppb. No MCL has been established for hexazinone. The U.S. EPA SNARL is 400 ppb.

Hexazinone use information for 2007

Site	Pounds
Alfalfa (Forage - Fodder)	57,439
Forest trees, forest lands	17,258
Rights Of Way	6,168
Rangeland	234
Landscape Maintenance	176
Outdoor Container/Field Grown Plants	16
All Other	33

Norflurazon

Norflurazon is a selective herbicide used primarily to control grasses and broadleaf weeds in alfalfa, tree crops, citrus, and vine crops. Norflurazon is listed on the 3CCR section 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 2.48 ppb. No MCL has been established for norflurazon. The U.S. EPA IRIS reference dose is 280 ppb.

Norflurazon use information for 2007

Site	Pounds
Alfalfa (Forage - Fodder)	18,786
Almond	15,224
Tangerine (Mandarin, Satsuma)	10,211
Grapes	11,443
Rights Of Way	8,984
Orange (All Or Unspecified)	4,658
All Other	8,845

Prometon

Prometon is a nonselective soil applied herbicide used to control annual, perennial broadleaf weeds, and grasses. Very little prometon is currently being applied. Historical use levels were higher. Prometon is listed on the 3CCR section 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 0.067 ppb. No MCL has been established for prometon. The U.S. EPA SNARL is 100 ppb.

Prometon use information for 2007

Site	Pounds
Structural Pest Control	2
Rights Of Way	1
Landscape Maintenance	>1

Simazine

Simazine is a 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 of way. Simazine is listed on the 3CCR section 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 0.68 ppb. CDPH and U. S. EPA have established an MCL for simazine at 4 ppb

Simazine use information for 2007

Site	Pounds
Orange (All Or Unspecified)	152,785
Grapes, Wine	101,596
Grapes	80,624
Rights Of Way	50,810
Almond	47,553
Walnut	39,462
All Other	68,467

Tebuthiuron

Tebuthiuron is a general herbicide used primarily along rights of way. Tebuthiuron is listed on the 3CCR section 6800(b) list of compounds that are likely to contaminate ground water. This is a new detection for DPR and the study results are still under review. The highest residue level of tebuthiuron verified by DPR was 0.154 ppb. There are no MCLs or HALs established for tebuthiuron . U. S. EPA has established a SNARL for tebuthiuron at 500 ppb

Tebuthiuron use information for 2007

Site	Pounds
Rights Of Way	7,308
Landscape Maintenance	1,889
Uncultivated Non-Agricultural Areas	153
Structural Pest Control	131

Glossary of Terms

TERM	*DEFINITION*
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	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 Department of Public Health pursuant to section 2426 of the Health and Safety Code. (Food and Agr. Code, section 11408) See also "legal agricultural use."
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.

Glossary of Terms, con't.

TERM	*DEFINITION*
Chemigation	The application of pesticides through irrigation water, using irrigation techniques and equipment.
Degradation	With respect to pesticides, degradation is the breakdown of the parent chemical by the action of microbes, water, air, sunlight, or other agents into daughter (degradation) products that may undergo further degradation by similar processes. With respect to ground water quality, degradation refers to a reduction of water quality.
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.
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.
Groundwater Protection List (GWPL)	A list, required by the PCPA and established in 3CCR section 6800, 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 A.I.s 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 (ten days or less), long-term (seven 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.

Glossary of Terms, con't.

TERM	DEFINITION
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 FAC section 11408. See also "agricultural use."
Maximum contaminant levels (MCLs)	MCLs are part of the drinking water quality standards adopted by CDPH and by U.S. 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.
Noncrop areas	These areas include rights-of-way, golf courses, cemeteries, and industrial and institutional sites. Agricultural use of pesticides in noncrop areas include weed control around buildings on a farm or on rights-of-way, irrigation canals and ditches, golf courses, parks, and cemeteries.
Nonpoint 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.

Glossary of Terms, con't.

TERM	*DEFINITION*
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.
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 (GWPL); (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 FAC sections 13149 through 13151, 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 geographic surveying unit of approximately one square mile, which is vulnerable to ground water contamination based on detections of pesticides or pesticide degradates in ground water due to agricultural use. PMZs were formally listed in section 3CCR section 6802 and 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.
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 also "well numbering system."

Glossary of Terms, con't.

TERM	DEFINITION
Registered pesticide	A pesticide product approved by the U.S. 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.
Section	A land unit of 640 acres or one square mile, equal to l/36 of a township. See also "well numbering system."
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	A unique number assigned to a well consisting of the county number/township/range/section/tract and sequence number. See "well numbering system" below.
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 also "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.

Glossary of Terms, con't.

TERM	DEFINITION
Verified detection	Pesticide 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 FAC section 13149(d).
Water quality limits	Numerical concentration values for chemicals found in water below which the water is considered safe for the specific use being referenced. These values are established by the U.S. EPA, CDPH, and the National Academy of Sciences. These values include, but are not limited to, MCL, Public Health Goal, Integrated Risk Information System, Health Advisory, SNARL, and other limits for specific factors such as cancer risk and reproductive toxicity, See the reference Marshack, Jon B., 2008.
Water solubility	The ability of a substance to go into solution with water.
Well inventory database	A statewide database, required by the PCPA and maintained by DPR, of wells sampled for pesticide A.I..
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 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.