Health & Safety Report

Worker Health and Safety Branch

HS-1833

Analysis of the Hazard Communication, Notification and Retaliation Requirements of the Worker Protection Standard and Recommendations for Improving California's Worker Protection Program

Susan A. McCarthy, Program Specialist

September 18, 2002

Revision No. 1, September 26, 2002

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF PESTICIDE REGULATION, 1001 I STREET, SACRAMENTO, CA 95812

Table of Contents **Page**

Executive Summary 4
Acronym Glossary 8
Introduction 8
Impacts of WPS on California's Hazard Communication Regulations 9
Hazard Communication 9
Application-Specific Information 10
Retaliation 11
Impacts of WPS on California Notification Regulations 11
Applicator Responsibilities 11
Operator of the Property Responsibilities 12
Pesticide Application Completion Notice 12
Methods 15
Results 16
Discussion 31
Hazard Communication and Application-Specific Display 31
Notification 32
Retaliation 33
Recommendations 34
Issue 1: Identify and evaluate problems in complying with notification requirements 34
Issue 2: Identify and evaluate problems in complying with hazard communication and application-specific display requirements 34
References 36
Appendix 38

Index to Tables and Charts **Page**

Table 1: California Regulations Governing Notification, Pesticide Application Completion Notice, and Application-Specific Information 14

Table 2. Summary of Compliance with Requirements for Displaying Hazard Communication and Application-Specific Information for Pesticide Handlers, 1997-1999 17

Table 3. Growers' and Farm Labor Contractors' Compliance with Fieldworker Notification Requirements 19

Table 4. 1991-1999 Fieldworker Episodes with Notification Violations Identified as a Contributory Cause for the Worker Exposure 20

Table 5(a): 1991-1999 Fieldwork Episodes per Year where Lack of Notification was Identified as a Contributory Cause for Worker Exposure, with REI, Crop and Pesticide Identified 23

Table 5(b): 1991-1999 Fieldwork Episodes where Lack of Notification was Identified as a Contributory Cause for the Worker Exposure, with Circumstances of Exposure 24

Table 6. Eight Key Elements of WPS as Identified in the Revised US EPA Worker Protection Field Inspection Pocket Guide, and California's Corresponding Regulations 30

Table 7. Three Types of Inspections Most Commonly Performed by County Agricultural Commissioners and Elements of WPS Covered in Each Type of Inspection 31

Chart 1. Compliance with Requirements to Display Application-Specific Information for Fieldworkers 18

Chart 2. Compliance with Hazard Communication Requirements for Fieldworkers 18

Chart 3. 1991–1999 Fieldworker Episodes with Employer – Employee Lack of Notification Identified as a Contributory Cause for the Worker Exposure 21

Chart 4. Fieldworker Episodes Per Year with Notification Identified as A Contributory Cause for the Worker Exposure, with Number of ACPs Per Year 26

Executive Summary

The federal Worker Protection Standard (WPS) was developed to reduce the risk of pesticide poisonings among agricultural workers and pesticide handlers through implementation of appropriate exposure reduction measures. Based substantially on California's existing worker protection program, WPS was fully implemented at the federal level in 1995. From 1995-1996 both California regulations and WPS governed worker safety in California. WPS was integrated into California regulations in 1997 (1,2,3,4). However, regulations governing display of application-specific information remain under interim equivalency. Federal regulations require the display of application-specific information before a pesticide application begins. California regulations require the display of application-specific information within 24 hours of the completion of a pesticide application. The Department of Pesticide Regulation (DPR) and the United States Environmental Protection Agency (US EPA) Region 9 are discussing the feasibility of bringing this regulation into full equivalency, pending the outcome of the national assessment of WPS.

Based on the recommendations of the General Accounting Office (GAO) and concerns expressed by a number of farm worker advocate organizations, DPR undertook an assessment of certain aspects of WPS in California. WPS sets standards for the protection of pesticide handlers (mixers, loaders, applicators, flaggers) and agricultural workers. Spencer (2001) evaluated the impact of WPS on the Restricted Entry Interval (REI) and posting requirements for a number of active ingredients, and evaluated the effectiveness of current field posting requirements (6). The hazard communication, application-specific information and notification requirements, and retaliation were other aspects of WPS of particular concern to both US EPA and worker advocate organizations. The current report analyzes the impacts of WPS on California regulations for hazard communication, application-specific information, and notification. It also evaluates compliance with these requirements by analyzing data from both the Pesticide Illness Surveillance Program (PISP) and DPR's Compliance Assessment Report (CAR) (8). The report responds to concerns expressed by farm worker advocate groups, farm production groups and US EPA Region 9 about these requirements and retaliation, and makes recommendations for improving the program.

Worker Health and Safety's (WH&S) evaluation of hazard communication and application-specific display requirements revealed that compliance in both areas needs improvement. Since the CAR did not assess hazard communication compliance for pesticide handlers, the only hazard communication and application-specific compliance data available for handlers were from PISP illness investigation reports. Handler illness investigation reports were examined for the years 1997-1999. During this period, about 30% of the reports included information on compliance with hazard communication and application-specific display requirements. Because of this low level of reporting, it is not possible to draw conclusions on compliance with these two requirements for handlers. However, the CAR did collect data on compliance with hazard communication and application-specific display requirements for fieldworkers. Analysis of the CAR data revealed that both growers and farm labor contractors (FLCs) had low compliance with

Pesticide Safety Information Series (PSIS) A-9 and application-specific information display requirements. Worker Health and Safety developed Pesticide Safety Information Series leaflets primarily as training aids for employees. California regulations require these documents to be part of pesticide handler and fieldworker training. PSIS A-8 and A-9 contain information regarding employee rights, employer's responsibility to provide employee training, pesticide illness and injury symptoms, hazard identification, restricted entry intervals, notification, posting, and information about pesticides containing Proposition 65 listed chemicals. Both growers and FLCs complied with PSIS A-9 display requirements approximately 47% of the time and displayed application-specific information about 23% of the time. WH&S has made changes to PSIS A-9 to assist employers in meeting the requirement. When DPR's CAR found that employers were not completing the pesticide application records section, located on page 3 of PSIS A-9**,** WH&S revised PSIS A-9 by moving this section to the front page. This same revision was made to PSIS A-8 along with a note, also on the front page, to employers advising them that they were required to fill in information elsewhere in the document.

Protecting workers against retaliation is another component of hazard communication receiving increasing attention. As part of their training, farmworkers are required by Title 3, Division 6, California Code of Regulations (3 CCR) to be told of their right to file a complaint about unsafe working conditions without fear of retaliation. PSIS leaflets are an integral part of California's hazard communication program. Both PSIS A-8, Hazard Communication Information for Employees Handling Pesticides in Agricultural Settings and PSIS A-9, Hazard Communication Information for Employers with Employees Working in Agricultural Fields, tell employees of their right to file complaints without fear of retaliation. However, US EPA Region 9 and farm worker advocate groups have expressed concern that, historically, the Department has made little provision to monitor retaliation against farmworkers. In the past, DPR relied on farm worker complaints to initiate an investigation. In 2001, the WH&S and the Enforcement Training Liaison Committee developed training materials to present to county staff on improving pesticide episode illness investigations. Included in the training are instructions on methods of interviewing farmworkers to lessen their concerns about employer retaliation. Investigators are to be trained in choosing acceptable interpreters and neutral interview locations, and who should be present during the interview. Investigators are to ask interviewees if they have experienced retaliation. If so, the worker is furnished with a telephone number and advised to contact a Division of Labor Standards Enforcement Office. In addition, DPR's Enforcement Branch has developed an inspection form to be used during oversight inspections. This form directs the investigator to question farmworkers about retaliation. Data gathered from these inspections will be used to gain a better understanding of the retaliation situation among California farmworkers.

Notification is an issue of concern to WH&S and farm worker advocates. Since notification is often oral and may rely on up to three different parties to relay information to the worker, communication breakdowns may occur (see Appendix A). WH&S evaluated 1991-1999 PISP data for all fieldworker episodes where the exposure occurred as a result of a lack of notification. Through analysis of these 35 episode investigations, it was possible to determine where the communication breakdown occurred in these

episodes. In 4 out of 35 episodes, the pesticide applicator failed to notify the operator of the property. The largest number, 30 or 86%, of these episodes resulted from the grower or his foreman failing to notify employees of the pesticide application. Posting regulations were in effect at the time of the early entry violation in 11 of these 30 episodes. The remaining 19 episodes were further analyzed to identify the crops, tasks and pesticides involved, and to determine the posting requirements that were in place at the time of the early entry violations. Thirteen crops and twenty-four pesticides were identified in the episode investigations. WH&S also analyzed Enforcement data to ascertain CACs' responses to episodes involving notification violations and found that agricultural civil penalties were levied in 54% of these cases.

DPR's recommendations for improving worker protection in California include redesigning PSIS to make the information more accessible to the farm worker community, evaluating regulations pertaining to notification and application-specific display requirements to determine if amendments should be made to improve clarity and enforceability, developing training materials to make CAC staff more aware of retaliation issues, and including evaluation of compliance with notification requirements as part of fieldworker inspections. DPR plans to address these recommendations by the following work plan:

- Fall 2002 – Meet with worker advocate organizations to discuss the findings.
- 2002/2003 – WH&S to improve the content of PSIS leaflets based on input from various stakeholders indicating that these outreach materials are too technical for users to understand. WH&S will contract with another agency for a graphic design of PSIS to further improve accessibility. Redesigned PSIS to be published in late summer of 2003.
- Fall 2002/Winter 2003 - Evaluate 3 CCR Section 6618, Notice of Applications, and Section 6619, Pesticide Application Completion Notice, to determine if amendments should be made to improve clarity and enforceability.
  -Consider eliminating the 24-hour period for submitting a completion notice.
  -Consider requiring the crew supervisor to possess written verification of application information on site when workers are within ¼ mile of a field with a REI in effect.
  -Consider requiring the operator of the property to verify receipt of time of application completion in writing before allowing workers in field.
  -Consider requiring the operator of the property to develop a written notification plan that would be signed by all parties involved.
- Fall 2002/Winter 2003 – Evaluate 3 CCR Section 6761.1, Application-Specific Information for Fieldworkers, to determine if amendments should be made to improve clarity and enforceability.
  -Consider requiring the grower/labor contractor to provide workers with oral or written information at the work site of recent applications (e.g., REI expired within the last 7 days) made to the field.
  -If specific information is provided at the work site, consider eliminating display of application-specific information at a central location.
  -Define central location as being where workers gather, meet or work.

- 2002 – WH&S and Enforcement to develop training materials to train CAC staff on interview methods to use during pesticide related illness/injury investigations to lessen farmworkers' fears of retaliation.
- 2002 - DPR's Enforcement Branch to develop an inspection form to use in oversight inspections that would include questioning worker(s) if they have experienced retaliation.
- 2002 – DPR's Enforcement Branch to amend fieldworker safety inspection forms to include evaluation of compliance with notification requirements.
- 2003 – WH&S should evaluate PISP investigative reports involving early entry violations to ascertain the level of compliance with notification requirements.

Acronym Glossary

3 CCR	California Code of Regulations, Title 3, Division 6
ACP	Agricultural Civil Penalty, an Enforcement Action (fine) which DPR and the CAC can take in response to violation(s) of 3 CCR
CAC	County Agricultural Commissioner, DPR's local enforcement arm
CAR	California Environmental Protection Agency, Department of Pesticide Regulation, Compliance Assessment Report
CPR	Californians for Pesticide Reform
DPR	California Environmental Protection Agency, Department of Pesticide Regulation
FLC	Farm Labor Contractor
FSI	Fieldworker Safety Inspections
VN	Notice of Violation, a Compliance Action that the CAC can take in response to violation(s) of 3 CCR
PCA	Pest Control Advisor
PCB	Pest Control Business
PISP	California Department of Pesticide Regulation, Worker Health and Safety Branch, Pesticide Illness Surveillance Program
PSIS	California Department of Pesticide Regulation, Worker Health and Safety Branch, Pesticide Safety Information Series
REI	Restricted Entry Interval
WH&S	Department of Pesticide Regulation, Worker Health and Safety Branch
WPS	Worker Protection Standard
US EPA	United States Environmental Protection Agency

Introduction

The federal Worker Protection Standard (WPS), Title 40, Code of Federal Regulations (CFR), Parts 156 and 170, was developed to reduce the risk of pesticide exposure among agricultural workers and pesticide handlers through implementation of appropriate exposure reduction measures. First issued in 1992, WPS was fully implemented on January 1, 1995 at the federal level. Prior to that time California already had in place an extensive worker protection program. In fact, the federal WPS was based substantially on the California program. From 1995 - 1996 both California regulations and WPS governed worker safety in California. In 1997 WPS was integrated into California regulations, Title 3, Division 6, California Code of Regulations (3 CCR), (1,2,3,4).

Though the WPS is a federal regulation, compliance enforcement is delegated to the individual states. In 2000, the General Accounting Office (GAO) recommended that the United States Environmental Protection Agency (US EPA) review the implementation and enforcement of the WPS (5). This national assessment began in 2000. In 1999, the Department of Pesticide Regulation (DPR) began meeting with a number of worker advocate organizations to discuss various aspects of the worker protection program that impact agricultural workers. These meetings focused on posting, hazard communication, notification, and retaliation. Because of the GAO recommendation, as well as the

concerns expressed by worker advocacy groups, the California Department of Pesticide Regulation Worker Health and Safety Branch (WH&S) began an assessment of certain segments of the WPS. Spencer (2001) examined the effectiveness of field posting pre- and post-WPS (6). Hazard communication, display of application-specific information, notification, and retaliation are evaluated in this report.

This report was revised on September 26, 2002 to correct a mathematical error on page 20, Table 4, column 4, Total Number of Workers. The correct total is 231 instead of 230.

Impacts of WPS on California's Hazard Communication Regulations

Hazard communication, often called "right to know", is a critical part of any worker safety program. California's Hazard Communication Program for pesticides, which took effect January 1, 1992, was developed to ensure that agricultural employees are informed and knowledgeable about the hazards they face in the workplace and have an understanding of the safety measures they can take to protect themselves. Workers are informed, largely through training, about location and content of Material Safety Data Sheets, pesticide use (exposure) records and application-specific information, requirements for notification and posting, and about Pesticide Safety Information Series leaflets. Existing California hazard communication regulations were amended, and sections were adopted to meet certain requirements of WPS. At present, hazard communication for pesticide handlers is covered in sections 6723 and 6723.1 of 3 CCR, while hazard communication for fieldworkers is covered in sections 6761 and 6761.1(2).

Hazard Communication -
The implementation of WPS has served to strengthen hazard communication in California. 3 CCR, Section 6724, Handler Training, was rewritten to incorporate technical WPS requirements. To meet other WPS requirements, information about heat-related illness, cautions about taking pesticides or containers home, and environmental concerns have been added to this section. A significant change due to WPS is the requirement that the person conducting the training for handlers must meet criteria for one of several qualifying categories. California regulations regarding handler training are more restrictive than WPS. California regulations specify that handlers must receive training prior to handling any pesticide, and receive training annually thereafter, while federal WPS only requires handler training every 5 years.

For fieldworkers, the only training required pre-WPS was some limited training of field crew leaders. With the implementation of WPS, 3 CCR, Section 6764, Fieldworker Training, was expanded and now requires that every fieldworker working in a treated field be trained, and receive training at least every 5 years thereafter. A treated field means a field that has been treated with a pesticide or had a restricted entry interval in effect within the last 30 days. Trainers of fieldworkers are now required to meet certain minimum qualifications of WPS. If a fieldworker has been trained within the past five years, the employer is exempt from this training requirement. WPS allows a grace period

of five days work before requiring fieldworker training. This grace period is not allowed under California regulations.

As part of pre-WPS hazard communication requirements, California regulations required that Pesticide Safety Information Series (PSIS) A-8, Hazard Communication for Employees Handling Pesticides in Agricultural Settings, to be posted in a prominent location where the employee usually started the day; and PSIS A-9, Hazard Communication for Fieldworkers, had to be accessible before fieldworkers were allowed to enter a treated field. Worker Health and Safety developed Pesticide Safety Information Series leaflets primarily as training aids for employees. California regulations require these documents to be part of pesticide handler and fieldworker training. PSIS A-8 and A-9 contain information regarding employee rights, employer's responsibility to provide employee training, pesticide illness and injury symptoms, hazard identification, restricted entry intervals, notification, posting, and information about pesticides containing Proposition 65 listed chemicals. To meet the US EPA requirements in WPS for the display of safety information, PSIS A-8 and A-9 were amended to incorporate the necessary safety information.

Application-Specific Information-
This requirement was included in WPS as one of the provisions to inform employees about pesticide hazards, specifically, requiring that employees be given access to information about what pesticides have been used on the establishment (14). Since it was determined that the pesticide use report information available at the time would not satisfy WPS requirements, two sections in 3 CCR (6723.1 and 6761.1) covering application-specific information for handlers and fieldworkers, respectively, were added to the hazard communication requirements. The information required in these sections must be displayed at a central location accessible to the employees and includes:

1. Identification of the treated area; time and date of the application;
2. Restricted entry interval
3. Product name, EPA registration number, and active ingredients.

The information must be displayed within 24 hours of the completion of application and include all applications that have been made within ¼ mile of where employees will be working. It must remain displayed until the area no longer meets the definition of a treated field or employees will no longer be on the establishment, whichever is earlier. The transfer of this same information from applicator down to the fieldworker is also covered in California's hazard communication regulations, 3 CCR, Section 6618, Notice of Applications and Section 6619, Pesticide Application Completion Notice (see Table 1).

Application-specific information display requirements are the only part of 3 CCR that remain under interim equivalency with WPS. Federal regulations require display of application-specific information before an application begins. DPR felt that this requirement conflicted with the realities of California agricultural practices and would not work for the following reasons: pest control applications are often rescheduled at the last minute for a variety of reasons; in many instances, growers would be displaying information which is inaccurate; workers would be misinformed of their potential

exposure to pesticides; and, continually updating the date of application would cause confusion and a lack of confidence in the system (12). California negotiated with US EPA to require the display of application-specific information within 24 hours of completion of the application. DPR and U.S. EPA Region 9 are discussing the feasibility of bringing this regulation into full equivalency, pending the outcome of the national assessment of WPS.

A major change in hazard communication for fieldworkers that accompanied integration of WPS into California regulations, was the elimination of crop sheets. Before the implementation of WPS, crop sheets were an integral part of California's hazard communication program. Worker Health & Safety had developed crop sheets for many commonly cultivated California crops. Printed in both English and Spanish, crop sheets offered information concerning pesticides most often used on the particular crop, the reentry interval for each of these pesticides, common symptoms of overexposure associated with each listed pesticide, first aid and safety information, the location of records and safety information, and emergency medical care information. In addition to the inherent problem of keeping crop sheets current, crop sheets did not cover all crops, so they could not be used as a means of transmitting the safety information required by WPS. The safety information was incorporated into PSIS A-8 and A-9 and some of the other information formerly listed on crop sheets is now displayed as part of application-specific information.

Retaliation-
Some regulations were already in place to protect agricultural workers against retaliation prior to the adoption of WPS. 3 CCR, section 6704, specified that agricultural workers were entitled to the same protections provided to all employees under the Labor Code, and PSIS A-8 and A-9 informed employees of their right to file complaints about unsafe working conditions without being retaliated against. With the implementation of WPS, 3CCR, sections 6724 and 6764, now require that pesticide handlers and agricultural workers be informed of their right against retaliation as part of their training. Retaliation is not defined in regulation, but is considered by WH&S and Enforcement to include any actual or threatened adverse action by an employer against an employee. DPR does not handle retaliation cases; instead, the cases are referred to the Department of Industrial Relation's Division of Labor Standards Enforcement.

Impacts of WPS on California Notification Regulations

The full integration of WPS into California regulations led to several changes in requirements governing notification. Previously, notification regulations were divided into two sections in 3 CCR. The first section, 3 CCR section 6618, governed notification provided by the pesticide applicator to the operator of the property before any pesticide was applied. In turn, the operator was to notify all persons who were on or likely to enter the property. Oral warning requirements were listed in a separate section, 3 CCR section 6776. According to this section, oral warning would be given to any employee who might reasonably be anticipated to enter an area being treated or which had been treated with a

pesticide for which the reentry interval had not expired. Under WPS oral warning requirements are part of notification and are incorporated into 3 CCR section 6618, while 6776 now outlines posting requirements only.

Applicator Responsibilities-
3 CCR section 6618, Notice of Applications, was amended to clearly address the kinds of information that must be transferred from the applicator to the operator of the property (subsection a) and the operator to the employee (subsection b). Before any pesticide is applied, the pesticide **applicator** is required to inform the **operator of the property** of the following:

1. Date and time of the scheduled application
2. Location and description of the area to be treated
3. Applicable restricted entry interval
4. The product name, EPA registration number, and active ingredient
5. Any precautions to be observed as printed on the pesticide product labeling or included in applicable laws or regulations
6. If the pesticide product labeling or regulations require the posting of treated fields.

Operator of the Property Responsibilities-
The **operator** of the property is required to give notice to any licensed **pest control business** (PCB) or **farm labor contractor** (FLC) hired by the operator that may have employees on or *within ¼ mile* (1/4 mile rule) of the field during the application or the restricted entry interval. Thus, the requirements for notification were expanded from notifying only those who might be expected to enter the treated field. The **PCB** or **FLC** in turn must give notice to his or her **employees**. Alternatively, the operator can give notice directly to the employees. This notice must be given prior to the application to persons who are in the field or likely to enter the field during the application; and before entry, to persons who may enter the field during a restricted entry interval. The notice must be in a language the person can understand and include:

1. Location and description of the treated area
2. Time during which reentry is restricted
3. Instructions not to enter the treated field, except as outlined in 3 CCR section 6770

This notification can serve as the application-specific information for 24 hours until the completion notice is received from the pesticide applicator (13). The WPS option of posting fields instead of attempting to notify everyone who may approach the field has been included in 3 CCR.

Pesticide Application Completion Notice-
The Pesticide Application Completion Notice requirements found in 3 CCR section 6619 remained unchanged with the adoption of WPS. According to this section, the PCB must give notice to the property owner or his designated employee within 24 hours of the completion of the pesticide application. The designated employee must at least have the

authority to reschedule or stop activities involving fieldworkers engaged in cultural practices. The completion notice must include:

1. Location of the property, including site identification number and acreage treated
2. Pesticide(s) applied
3. Date and hour application was completed
4. Applicable reentry and pre-harvest intervals

This notice may be posted, left on an answering machine, or faxed, verifying that the application notice was correct.

Table 1 provides a comparison of the regulations governing notification, pesticide application completion notice and application-specific information. Application-specific information is the only one of these three that is required to be in writing. The regulations have some redundancies. All four sections require transmittal of virtually the same information (pesticide, date and location of application, and REI). However, only 3CCR Section 6618 requires communicating posting requirements and label precautions, and communicating PHI information is only covered in 3CCR Section 6619.

Table 1: California Regulations Governing Notification, Pesticide Application Completion Notice, and Application-Specific Information			
	Requirements of Each Section		
	Notice of Applications (3 CCR Section 6618)	Pesticide Application Completion Notice (3CCR Section 6619)	Application-Specific Information (3CCR Sections 6723.1 (pesticide handlers) and 6761.1 (fieldworkers))
How must the information be communicated?	Oral or Written	Oral or Written	Written
Who is responsible for initiating the communication?	Pesticide applicator and/or the operator of the property	Pesticide applicator	Operator of the property
To whom must the information be conveyed?	Operator of the property; other pest control businesses or licensed labor contractors, foremen, handlers, and/or fieldworkers who may enter or pass within ¼ mile of the treated field	Operator of the property	Pesticide handlers and fieldworkers
When must the information be conveyed?	Prior to application and/or prior to employees entering treated field	Within 24 hours of completing pesticide application	Within 24 hours of completing pesticide application
What information must be included in the communication?	-Date, time, and location of pesticide application -Identity of pesticide, -EPA registration number, and active ingredient(s) -Label precautions -REI[1] -Posting requirements	-Date, time, and location of pesticide application completion -Pesticides applied -REI and PHI[2] -Acreage treated	-Date, time, and location of pesticide application -Identity of pesticide, EPA registration number, and active ingredient(s) -REI
How long must the information be available (or maintained)?	Duration of the REI	2 years	Until the area no longer meets the definition of a treated field or fieldworkers (or handlers) will no longer be on the establishment

[1]Restricted entry interval [2]Pre-harvest interval

Methods

To evaluate compliance with requirements for hazard communication, application-specific information display, and notification, data from WH&S' Pesticide Illness Surveillance Program (PISP) (7) and DPR's Compliance Assessment Report (CAR) (8) were analyzed.

PISP data are compiled from physician reports and Worker's Compensation Records. After a pesticide related illness or injury is reported, the local CAC investigates and reports on the circumstances of exposure. Based on these reports, WH&S then characterizes pesticide related illnesses and injuries as either definitely, probably, possibly, unlikely or unrelated to pesticide exposure. As part of the investigation, the CAC has the discretionary powers to take a variety of actions against responsible parties (operators of the property, FLCs, pesticide applicators, etc.) if violations of laws or regulations are found. These actions vary in severity from compliance actions such as a written Violation Notice (VN) to the assessment of an Agricultural Civil Penalty (ACP), or fine, and/or revocation of licenses. Fines range from $50 for minor violations to $1,000 for serious violations (9).

DPR began work on the CAR in June 1997 and continued March 2001. During this period, DPR conducted an assessment of agricultural employers' compliance with pesticide safety requirements. The Department chose 20 counties in which to conduct 572 observations of agricultural pesticide handling activities and 239 observations of fieldworkers performing hand labor in fields with a history of pesticide treatment. For the purposes of the compliance assessment report, DPR staff developed four specific checklists to assure accurate assessment of 3 CCR criteria. These checklists were for handler compliance with 3 CCR, fieldworker safety requirements, closed system requirements, and methyl bromide soil fumigation. While conducting the assessment, DPR staff determined compliance with notification requirements by questioning the field foreman or workers about the system used to notify them of possible applications or restricted entry intervals within ¼ mile of where they were working. From its observations, the Department was able to assess the general level of compliance among agricultural employers, and is developing improvement strategies for the program at both state and county levels. Analysis of the PISP data allows for correlation of pesticide-related illness/injury episodes and 3 CCR violations, while data from the CAR yields a more comprehensive picture of compliance with 3 CCR in California.

To assess employer compliance with hazard communication and application-specific display requirements for pesticide handlers, WH&S evaluated all definite and probable pesticide-related handler illness episodes for the period of 1997-1999 and, if pertinent, noted the imposition of ACP(s) (10). Employer compliance with hazard communication and application-specific display requirements for fieldworkers was assessed by examining data from the CAR.

Compliance with notification requirements for fieldworkers was assessed by examining PISP and CAR data. Spencer (2001) identified all definite and probable fieldworker

illness episodes from PISP data for the years 1991-1999 that were recognized as restricted entry violations, and identified the causes of the restricted entry violations. The current report further analyzes the fieldworker episodes where lack of notification was identified as a contributory cause for the restricted entry violation. In addition, WH&S examined all fieldworker episode illness investigation reports from 1995-1999 for exposures that might have resulted from a violation of the 1/4 rule. This rule took effect at the federal level in 1995. Illness investigation reports supplied by CACs vary in content and depth. Some investigation reports refer to a specific type of inspection being performed but do not include a copy of the inspection, while other include a copy of the completed inspection form. At times, information germane to this report could be found embedded in the narrative section of the investigation.

Beginning in 1999, DPR had a series of meetings with farmworker advocate groups who were critical of the current level of pesticide enforcement in California. These groups were concerned about a variety of pesticide safety-related issues, identified several program improvements, and made specific recommendations for changes to DPR's program. DPR agreed to focus its assessment on posting, hazard communication, and notification requirements. In early 2000, DPR participated in five regional meetings with CACs to discuss these recommendations and obtain input. A summary of the worker advocate groups' recommendations and the CACs' comments were then presented at the California Agricultural Commissioners and Sealers Association (CACASA) conference in May 2000. In February 2001, DPR held a regional meeting in Monterey County and one in Fresno County to gain input from the agricultural production community. Participants were asked about their methods of complying with posting, notification and hazard communication requirements.

As part of the national assessment of WPS begun in 2000, US EPA Region 9 prepared an evaluation of WPS in California. Overall, Region 9 was pleased with California's implementation of WPS but had concerns with some of the methods used to determine compliance. Findings from Region 9's report are included in this report along with steps DPR is implementing to address EPA's concerns.

Results

Handlers-
Since the CAR did not assess compliance with hazard communication and application-specific display requirements for pesticide handlers, PISP illness investigation reports provided the only data available for this report. Table 2 is a summary of all hazard communication and application-specific display compliance information that could be obtained from the 1997-1999 pesticide-related handler illness investigation reports (7). These data show that illness investigation reports have not, historically, provided a useful tool for evaluating hazard communication and application-specific display compliance. In 1997, only 12 out of 54 (22%) investigations, noted the level of compliance with the requirements for displaying hazard communication and application-specification information. In 7 of these 12 cases, both categories were in compliance. In the other 5

cases either hazard communication information and/or application-specific information was not in compliance. In 1998, 28% of the investigations noted the level of compliance, with 10 out of 13 reporting both categories in compliance. In 1999, the number of investigations including information regarding hazard communication and application-specific information had risen to 19 out of 40, or 48% of the total handler investigations for the year. Of these 19, 13 were found to be in compliance. Although predictions are not possible from one year's data, it is encouraging to note the increase in the level of reporting for these two categories in 1999. Since the percentage of investigations that included hazard communication and application-specific compliance is small (<30%) for both 1997 and 1998, little can be inferred from the PISP data regarding overall compliance with these specific requirements.

Table 2: Summary of Compliance with Requirements for Displaying Hazard Communication and Application-specific Information for Pesticide Handlers[1], 1997-1999

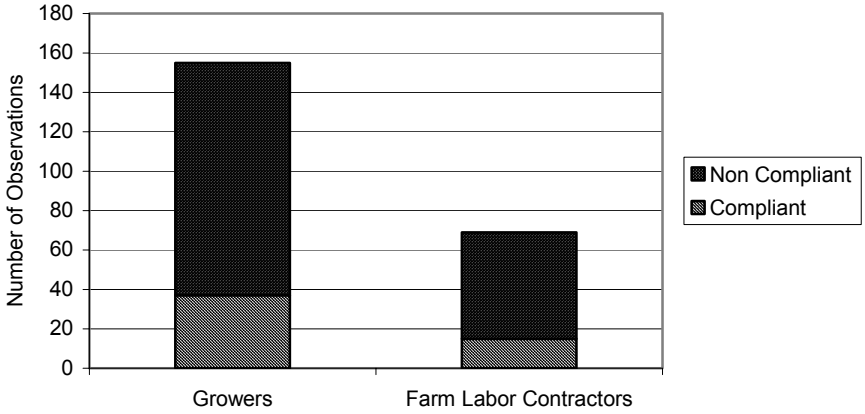
Year	Total Number of Episodes	Number of Investigations that Reported Hazard Communication and/or Application-specific Information Compliance[2]	In Compliance	Not in Compliance[3]
1997	54	12 (22%)	7	5
1998	46	13 (28%)	10	3
1999	40	19 (48%)	13	6
Totals	140	44 (31%)	30	14

[1]PISP Data on All Reported Definite and Probable Handler Pesticide Related Injury and Illness Episodes Covered by WPS
[2]Pest Control Records Inspections done on PCBs do not report compliance with application-specific information requirements
[3]Lacking hazard communication **and/or** application-specific information.

Fieldworkers- (unless otherwise indicated, 'fieldworker' includes irrigators, greenhouse workers and tractor drivers)

Chart 1 summarizes the data collected by Enforcement (8) regarding the display of application-specific information. One hundred fifty-five observations were made of growers, and 69 of FLCs. The level of compliance between these two groups was approximately the same. Thirty-seven of 155 growers (24%) and 15 of 69 FLCs (22%) complied with the requirements to display application-specific information. To be in compliance, the information must be displayed in an accessible area, be kept current, and contain all the required information. For instance, if the information was kept by the foreman and provided to the worker only upon request, this was determined to be out of compliance.

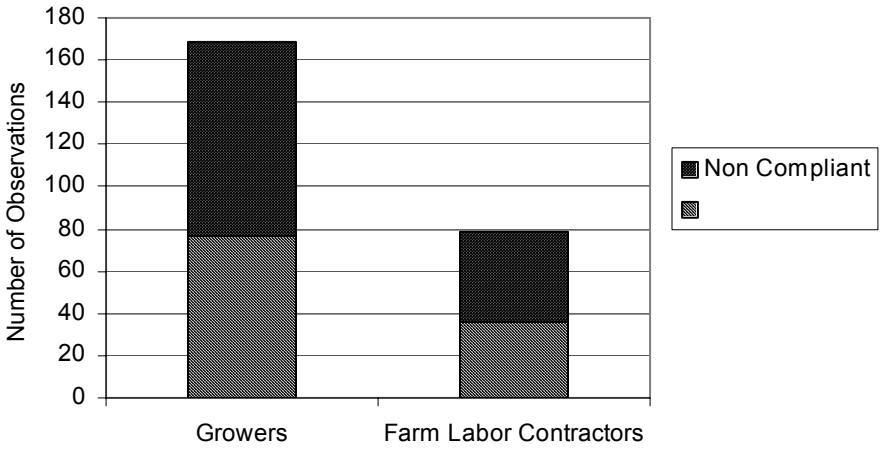
Chart 1: Compliance with Requirements to Display Application-specific Information for Fieldworkers[1]



[1]Data From DPR's Compliance Assessment Report, June 1997 – March 2001.

As seen in Chart 2, the rate of compliance with hazard communication requirements for fieldworkers was not significantly different for growers and FLCs. One hundred sixty-one observations were made of growers, and 69 of FLCs. Compliance with hazard communication requirements for fieldworkers is low in both groups. Seventy-seven of 161 employers (48%) displayed PSIS A-9 during this observation period, while 32 out of 69 FLCs (46%) were in compliance. In addition, it was reported that employers also failed to complete the space in PSIS A-9 listing the location (address) of the application-specific information.

Chart 2: Compliance with Hazard Communication Requirements for Fieldworkers[1]



[1]Data From DPR's Compliance Assessment Report, June 1997 – March 2001

Data shown in Table 3 were gathered as part of DPR's Compliance Assessment Report (8). This report showed a high level of compliance with the notification requirements for both growers and farm labor contractors. The level of compliance was determined by

asking field foreman or workers about the system used to notify them. Responses were not tabulated by type of employee (supervisor vs. fieldworker). Since the survey only asks about the method of notification, it does not tell us the actual frequency of notification compliance, nor does it address compliance with the ¼ mile rule.

Table 3: Growers' and Farm Labor Contractors' Compliance with Fieldworker Notification Requirements[1]

Growers		Farm Labor Contractors	
# Observations	% Compliance	# Observations	% Compliance
152	94%	69	97%

[1]Data From DPR's Compliance Assessment Report, June 1997 – March 2001

Table 4 lists all fieldworker episodes from 1991-1999 definitely or probably related to pesticide exposure, with lack of notification identified as a contributory cause. From reading the investigation reports, it was possible to determine the number of workers involved in each episode, the task being performed at the time of exposure, and exactly where in the chain of communication the breakdown in notification occurred. Enforcement action taken in response to these episodes was obtained from the Enforcement/Compliance Action Summary Database (10) and from interviews with CACs. From 1991 – 1999 a total of 35 illness episodes (3.5/year) were associated with lack of notification. Four of these episodes resulted from the applicator failing to notify the operator of the property. All 4 episodes occurred in 1997 or earlier. Applicator error was the cause of one episode in 1992. The largest number of episodes, 30 (or 86%), resulted from the grower or his foreman failing to notify employees of the pesticide application. The number of workers involved per episode ranged from 1 to 57. A total of 17 ACPs were levied in this category, ranging from $400 to $14,832. The largest fine was levied for an episode involving exposure of 32 fieldworkers, and the grower was assessed the fine on a per fieldworker basis (i.e. $401 x 32 fieldworkers for use in conflict with labeling plus $1000 each for lack of notification and posting). In one early entry episode involving exposure of 57 fieldworkers, the CAC's investigation determined there were no violations, and no ACP was levied. For the purpose of this assessment, DPR deemed this incident to be a restricted entry violation due to lack of notification. Of the 35 episodes, 1 involved a greenhouse worker, 2 a tractor driver, 18 involved fieldworkers, and 14 involved irrigators. However, this resulted in 232 fieldworkers being exposed versus 24 irrigators. Since fieldworker crews are usually much larger than irrigator crews, a single episode involving fieldworkers may result in a large number of persons exposed.

Table 4: 1991-1999 Fieldworker Episodes[1] with Notification Violations Identified as a Contributory Cause for the Worker Exposure

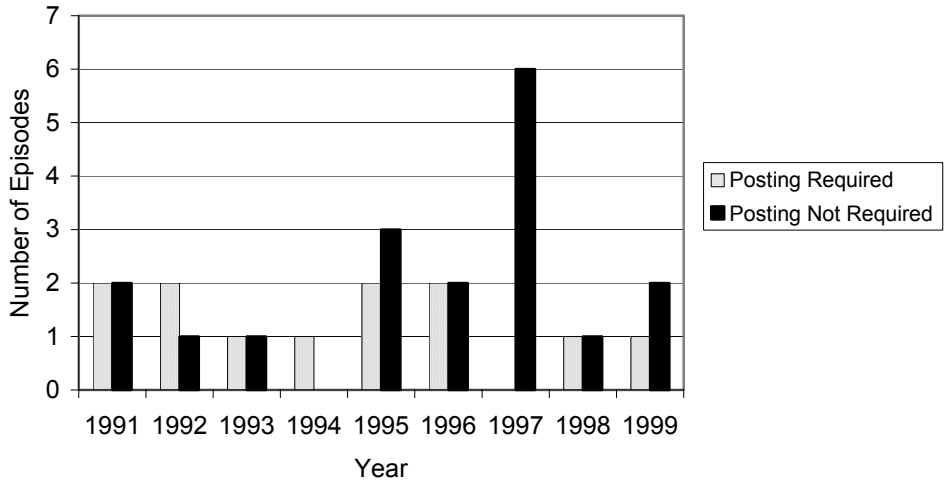
	Applicator Failed to Notify Operator of Property[2]	Applicator Error[3]	Employer Failed to Notify Employee(s)[4]	Totals
Number of Episodes	3 FW[5] 1 IR	1 FW	14 FW 13 IR 1 GHW 2 T	18 FW 14 IR 1 GHW 2 T
Episode Totals	4	1	30	35
Number of ACPs[6]	2	1	17	20
Number of Workers by Task	24 FW 1 IR	3 FW	205 FW 23 IR 1 GHW 2 T	232 FW 24 IR 1 GHW 2 T
Total Number of Workers	25	3	231	259

[1]A PISP case number is assigned for each person exposed to one or more pesticides. For the purposes of this section, an illness episode refers to a one-time pesticide exposure. An episode can involve a single case or multiple cases.
[2]Applicators either changed application date without notifying grower and/or did not give notice of completion to grower.
[3]Applicator accidentally sprayed wrong area. One episode in 1992.
[4]Refers to growers and/or their supervisory personnel, and FLCs.
[5]Tasks identified were fieldworker (FW), irrigator (IR), greenhouse worker (GHW), or tractor driver (T)
[6]Number of ACPs could be slightly higher than shown since not all pre-1996 ACP data are available.

Expanding posting regulations has been suggested as a way of decreasing the number of early entry violations that result from the operator of the property failing to notify employees. Accordingly, the 30 episodes identified in Table 3 as, "Grower Failed to Notify Employee," were further analyzed to determine what posting regulations were in place at the time of the violations. These data are presented in Chart 3. If posting regulations were in place and were not followed, then expanding posting requirements would probably not decrease these types of early entry violations. Posting was required at the time of the early entry violation in 12 of the 30 episodes. In 8 of those12 episodes, some or all posting was in place. For example, in one episode involving 29 fieldworkers, 2 posting signs were up and 2 had fallen, leading the foreman to think that the posting signs would soon be removed. In another episode, the field was posted and workers noticed the signs but were directed to perform cultural activities that were not allowed during the restricted entry interval. In the 18 remaining episodes, no posting was required, so the early entry violation was entirely due to lack of notification. In 1997 lack

of notification was the primary cause of 6 episodes. In 1995 three episodes resulted from lack of notification. In all other years during this time period, lack of notification was the primary cause of 2 or fewer early entry violations per year. From 1991-1999, lack of notification was a contributory cause in 0 – 6 (an average of 1.9) exposure episodes per year.

Chart 3: 1991–1999 Fieldworker Episodes with Employer – Employee Lack of Notification Identified as a Contributory Cause for the Worker Exposure[1]



[1]Episodes further identified as to whether or not posting was required at the time of the early entry violation.

The 18 episodes that did not involve posting violations were further analyzed to ascertain if there were any tasks, restricted entry intervals, or crop/chemical combinations that were common to a number of the episodes. These data are presented in Tables 5(a) and 5(b). Nine of the episodes involved fieldworker exposure, 1 episode involved a tractor driver exposure, and the other eight involved irrigator exposure. As can be seen from the two tables, the 18 episodes have little in common. Twelve crops and 23 pesticides were identified. Although grapes were identified in 3 of the episodes, two of these occurred while the 'spray had dried, dust has settled' REI was still in effect. This type of REI no longer exists. Onions were identified with two episodes involving irrigators. Cantaloupe and cauliflower were each identified with one fieldworker episode and one irrigator episode. The remaining crops were identified with a single episode each. Esfenvalerate was identified in three episodes (1 fieldworker episode, 2 irrigator episodes). Diazinon, endosulfan, methomyl, naled, and oxyfluorofen were each identified in two episodes. All other pesticides were only associated with one episode. Likewise, the causes and circumstances of exposure varied widely as detailed in Table 5(b). The episode involving the most fieldworkers (57) occurred because the PCA entered the wrong date on the notice of intent and the application took place 12 hours earlier than intended. Two episodes resulted from a violation of the ¼ mile rule. In 1997, a tractor driver was

exposed to drift from a pesticide application on an adjacent field owned by the same grower. In 1999, 17 members of a cantaloupe harvesting crew were exposed to residue from an application on a neighboring field owned by the same grower. There were four episodes (3 in 1997, one in 1998) where workers were actually in the field while an application was taking place.

Table 5(a): Fieldworker Episodes Where Lack of Notification was Identified as a Contributory Cause for the Worker Exposure, with REI, Crop and Pesticide Identified

				Crop												Pesticide																							
Year	Task	Number of Workers	Restricted Entry Interval	Almonds	Cabbage	Cantaloupe	Cauliflower	Citrus	Corn	Cotton	Grapes	Onions	Pears	Sunflowers	Watermelon	Acephate	Bensulide	Bifenthrin	Chlorothalonil	Chlorpyrifos	Cypermethrin	Diazinon	Dicofol	Endosulfan	Esfenvalerate	Fenarimol	Iprodione	Mepiquat Chloride	Methidathion	Methomyl	Mevinphos	Myclobutanil	Naled	Oxyfluorofen	Propargite	Streptomycin	Sulfur	Triademifon
1991	FW[1]	1	S[2]								X															X													
1993	FW	6	S								X																X												
1995	FW	57	2d												X			X					X	X															
1997	FW	9	24h[3]				X																												X				
1997	FW	15	3d[4]								X																											X	
1997	FW	17	48h			X																		X	X					X									
1997	FW	10	12h										X																								X		
1997	T[5]	1	12h		X												X																						
1998	FW	3	24h											X		X						X										X							
1999	FW	9	60h							X																		X					X						
Totals		128			1	1	1			1	3		1	1	1	1	1	1				1	1	2	1	1	1	1		1		1	1	1		1	1	1
1991	IR[6]	3	48h			X																			X					X	X								
1992	IR	3	7d						X																										X				
1995	IR	1	12h						X													X			X														
1995	IR	1	24h				X																											X					
1996	IR	1	2d					X												X																			
1996	IR	2	48h									X							X																				
1997	IR	3	24h	X																									X				X						
1999	IR	1	12h									X									X																		
Totals		17		1		1	1	1	2			2							1	1	1	1			2				1	1	1		1	1	1			

[1]Fieldworker
[2]Spray has dried, dust has settled
[3]h – hours
[4]d – day
[5]Tractor Driver
[6]Irrigator

Table 5(b): 1991-1999 Fieldworker Episodes, Where Lack of Notification was Identified as a Contributory Cause for the Worker Exposure, with Circumstances of Exposure[1]

Year	Task	Number of Workers	Restricted Entry Interval	Circumstances of Exposure
1995	FW	57	2d	Pest control advisor entered wrong date on notice of intent. Field was treated with bifenthrin, dicofol and endosulfan on a Tuesday morning instead of late Tuesday night or Wednesday morning. Fieldworkers entered the field early Tuesday to harvest watermelons since the property owner was unaware the application had already taken place.
1997	FW	9	24h	Fieldworkers entered field to plant cauliflower seedlings while an application of oxyfluorofen was still in progress. The operator of the property had forgotten that he had ordered the pesticide application to occur along with a fertilizer application. The applicator was also at fault since the spray foreman saw the workers enter the field during the application and made no effort to stop them.
1997	FW	15	3d	Fieldworker crew was exposed while thinning grapes in a vineyard that had been treated with sulfur 8 hours earlier. The operator of the property, who relied solely on an oral notification system, was aware of the application, but had not informed the FLC.
1997	FW	17	48h	Cantaloupe harvesting crew entered field 31 hours into a 48-hour REI (for endosulfan, esfenvalerate and methomyl). The operator of the property had mistakenly believed that part of the field had been left untreated and directed the harvesters into that part.
1997	FW	10	12h	Workers continued thinning pears during a streptomycin application. In fact, they had to move their ladders from time to time to avoid the applicator. They were told the application was fertilizer only.
1997	T	1	12h	Tractor driver cultivating cabbage 28 rows away from a bensulide application. The wind shifted, causing him to be exposed to pesticide drift.
1998	FW	3	24h	Foreman was told not to send workers into a sunflower field that was being treated with acephate, diazinon and myclobutanil. He misunderstood and directed the workers to enter the field and begin working.
1999	FW	9	60h	Cotton weeding crew was exposed to residue that had drifted from an application of mepiquat chloride and naled on an adjacent field belonging to the same grower. The grower was aware of the application but had failed to notify the FLC.
1991	IR	3	48h	Irrigator crew (siphon pipe) entered cantaloupe field one hour into the 48-hour REI (for esfenvalerate, methomyl and mevinphos). They had not been notified of the application or REI.
1992	IR	3	7d	Three irrigators were placing dams in irrigation ditches in a corn field.The corn had been treated with propargite 6 days earlier. The employer failed to notify the employees of the reentry interval and the need to shower.

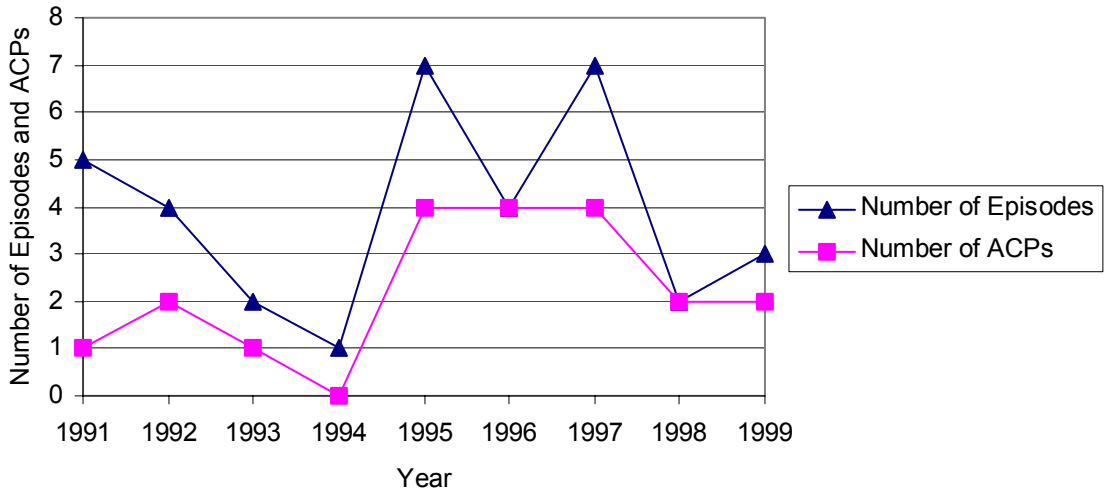
Table 5(b): 1991-1999 Fieldworker, Where Lack of Notification was Identified as a Contributory Cause for the Worker Exposure, with Circumstances of Exposure (continued)

Year	Task	Number of Workers	Restricted Entry Interval	Circumstances of Exposure
1995	IR	1	12h	An irrigator entered a corn field four hours after an application of diazinon and esfenvalerate. He was aware of the application but had not been notified of the REI or to have no contact with the foliage.
1995	IR	1	24h	An irrigator entered a field to lay irrigation pipe. He knew the field had been treated because he saw the posted spray schedule, but he did not read the REI, nor did his supervisor notify him of the REI in effect for the oxyfluorofen application.
1996	IR	1	24h	A nursery worker was exposed to chlopyrifos residue while irrigating nursery stock with a hand held hose. His supervisor said that he thought the irrigator was working a safe distance from the application, and also assumed that he saw the application taking place.
1996	IR	2	48h	An application of chlorothalonil occurred later than scheduled. The ranch foreman, assuming the application had taken place as scheduled, sent two irrigators into a field 9 hours before the REI expired without notifying them that the field had been treated.
1997	IR	3	24h	Irrigators were working in an almond orchard and saw applicators enter orchard and begin applying methidathion and naled. The applicators also saw the irrigators when they began work but thought they had moved far enough away from them to be safe.
1999	IR	1	12h	The wrong site number was entered on the notice of intent. An irrigator, who had not been notified of the application, entered the field to check sprinklers 3 hours and 45 minutes before the REI for cypermethrin had expired.

[1]The circumstances of exposure for the two episodes involving the 'spray has dried, dust has settled' REI are not included here.

Chart 4 shows the correlation between the number of episodes involving notification violations per year and the number of ACPs levied per year from 1991 – 1999. With the exception of 1995 and 1997, the number of pesticide related illness/injuries per year resulting from notification violations remained fairly constant during 1991-1999. The greatest disparity between the number of episodes involving notification violations and the number of ACPs levied occurred in 1991. That year there were 5 episodes, involving a total of 12 workers, resulting in the imposition of 1 ACP. The largest numbers of episodes involving notification violations occurred in 1995 and 1997. In both of these years there were 7 episodes, resulting in the imposition of 4 ACPs. In all the other years there were 4 or fewer episodes per year, with an average of 2 ACPs per year for episodes involving notification violations. Overall, ACPs were levied in 19 out of 31 episodes or 61% of the time. In 3 out of the last 4 years, an ACP was levied for each episode involving an early entry violation. In 1999 there were 3 episodes identified as early entry violations caused by lack of notification, resulting in the imposition of 2 ACPs.

Chart 4: Fieldworker Episodes[1] Per Year Where Lack of Notification was Identified as a Contributory Cause for the Worker Exposure, with Number of ACPs[2] Per Year



[1]From PISP Database, 1991 –1999
[2]One episode was referred by DPR to U.S. EPA Special Investigator

Summary of Comments from DPR Workshops-
In early 2001, two workshops were held, one in Fresno County and one in Monterey County, with members of the agricultural production community to learn more about their systems for meeting WPS requirements for notification, field posting and hazard communication (a more complete discussion of these meetings and workshops can be found in Spencer, 2001).

1. Notification:
   The agricultural community generally agrees that central notification sites work, but complying with notification requirements is the most challenging part of meeting WPS

requirements. Many growers have developed innovative ways of ensuring workers are properly notified. Growers described methods such as regular tailgate sessions with supervisors and crew, marking treated plots on a large plexiglass map and requiring supervisors to sign off daily that they have observed the map, maintaining notebooks of treated plots on each labor crew bus, confirming each application verbally prior to spraying, and radioing key staff if any questions arise.

Participants' Problems Complying with Notification Requirements

- Communication breakdown between various parties
- When different PCA's work on adjacent fields, a crew can show up for work in one field while an application is scheduled for an adjacent field.
- The '1/4 mile' rule seems difficult to most growers, you can only know about your own fields, which may not be protecting your workers if the ¼ mile is really meaningful
- 12-24 hour REIs may expire before growers receive completion notices. Thus, they are unable to notify their workers about these applications.

Participants' Suggestions for Improving Notification Compliance

- Post everything
- Need applicators to send completion notice as soon as possible. Twenty-four hours is too long.
- Add contact name and phone number of adjacent ranchers to the map requirements for the benefit of both applicators and "sensitive sites" (schools, individuals).
- Prior to any pest control application, property operators are required to obtain a site identification number from the CAC. As part of this process, they must provide the CAC with the location, description, or map of the site(s) where the pest control will be performed (Section 6623, 3CCR).
- Make central notification the applicator's responsibility.

2. Hazard Communication:
   Complying with hazard communication and application-specific requirements is seen as very frustrating. Although a huge amount of time is devoted to maintaining the system, it is perceived as benefiting no one. Workers do not access the information, only the inspectors. A physician or labor union representative has, on rare occasions, requested a copy of an MSDS, application-specific records or pesticide use records. Despite being frustrated with the system, some growers have been resourceful in developing ways to comply with the requirements. Some post information in a weather-proof box at the shop, field, time clock, change areas or toilets, or place the information in a binder in the crew boss' vehicle or labor crew bus.

   Participants' Problems Complying with Hazard Communication Requirements and Displaying Application-Specific Information

   - Regulations lack a uniform standard for displaying this information
   - Small operations' offices are not open when crews are in the field, so hazard communication information is inaccessible
   - Takes too much time to maintain for an activity with questionable benefits

- Active ingredient required on display and completion notices but use reports only state the product name
- "Central location" is not well defined. Small growers may maintain the information at headquarters that could be far from where the workers are. In effect, the information is inaccessible.
- The documents are too technical and workers don't want the information. PSIS A-9 often discarded in trash.
- Difficult to comply with the requirement that fieldworkers be trained (i.e. receive hazard communication information) prior to field entry

Participants' Suggestions for Improving Hazard Communication Requirements

- Define "central location" as being where workers routinely gather, meet, or work
- Communicate, inform workers of their rights and the available information
- Workers frequently discard copies of A-9's, brief, frequent overviews are effective

Summary of Recommendations and Comments on Hazard Communication and Notification Requirements, and Retaliation from Farm Worker Advocate Organizations, CAC and CACASA-

Beginning in July 1999, DPR met with many worker advocate organizations to discuss issues of pesticide safety that affect farm workers. Following these meetings, DPR met with CACs at five regional meetings to get their input regarding the worker advocates' recommendations. Below are recommendations from Farm Worker Advocate Groups (numbered), followed by County Agricultural Commissioner (CAC) and County Agricultural Commissioner and Sealers Association (CACASA) comments in italics.

1. The current system of notification that relies on up to three different parties to forward information to the worker is liable to a breakdown in communications. Californians for Pesticide Reform (CPR) recommends establishing an extensive posting requirement to address this problem. If every field were posted with the information, then workers would not have to rely on oral communication between parties. CPR also recommends using this system to meet the requirement for accessing exposure records or to provide a neutral location where workers can access records without fear of retaliation.

   Field posting that would meet the application-specific records criteria would need to remain in place after the REI and during fieldwork. This would remove the universally accepted warning of present field posting signs. Posting now means, stay out! Under this proposal, this warning of true, immediate hazard would be diluted by "informational posting" for hazard communication.

   Agricultural production takes place in open, unfenced and unattended rural areas. Posting each field with application history would be very vulnerable to vandalism and difficult to establish and monitor.

   The notification required under present law and regulation should be improved by requiring that it be in writing down to the employer level. Verification of notification is

very difficult and compliance is frequently questionable but not actionable.

2. DPR needs to expand program to be more attuned to retaliation issues.

   Retaliation cases are the responsibility of Cal/OSHA. DPR's policy is to forward any retaliation cases they are made aware of to Cal/OSHA for investigation.

3. Include specific health hazards on posting signs.

   Listing specific health hazards should not be necessary since the purpose of current posting is to prevent entry. There should be no health hazards after the REI has expired. This warning would also be difficult to list on signs.

4. Daily verbal notification to workers of at least the two most recent applications and the next two pending applications for the fields where they will be working. The information would include the pesticide name, date and time of applications, REI information, acute and chronic effects of exposure, and appropriate treatment for poisoning.

   This seems like a step back from the current "display" information requirement. Verbal requirements are difficult to enforce.

   Future applications are impossible to predict because pest pressure, weather, cultural practices, economics and many other factors affect this decision.

5. Graphically display pesticide applications for the last 30 days. This graphic display may be a map or calendar containing application information in English and Spanish. The information would include the pesticide name, date and time of applications, REI information, acute and chronic effects of exposure and appropriate treatment for poisoning.

   This sounds like good information that could be considered in determining how best to display the required information. We need to determine a method of clearly communicating this information to workers.

6. Posting of the written notice on the outside and inside of field toilet facilities.

   Written notice is required before and after the application. Logistically this would be impossible and would not protect workers.

7. Written notification of applications in the last 30 days with each paycheck. The information would include the pesticide name, date and time of applications, REI information, acute and chronic effects of exposure, and appropriate treatment for poisoning.

   Providing information in this manner would be of questionable benefit.

8. An anonymous 1-800 number to call for information on fields treated in the last 30 days and pre-notification of planned applications.
   Toll-free phone lines are expensive and would require personnel to answer and respond. The benefit may not be worth the cost.

9. Farm operators should be held responsible for any violations because they have overall control over all work conducted on the property they manage.

   Farm operators currently share responsibility with the farm labor contractor if they perform any employer functions such as providing supervision or instruction.

   Farm labor contractors have employer responsibilities and are held responsible when they perform any employer functions. Frequently both the grower and the FLC are held responsible.

Comments from US EPA Region 9 Worker Protection Standard Assessment-
US EPA Region 9 staff completed their assessment of California's WPS implementation in August 2001 (5). Region 9 praised DPR's Worker Protection Program for, among other things, the large number of field inspectors, putting a priority on hiring Spanish-speaking inspectors, having regulations that were in some cases stronger than federal standards, and obtaining the authority to take enforcement actions (such as fines, revocation of licenses or permits, etc.) against violations committed in multiple jurisdictions or associated with priority investigations. Some of the problems Region 9 noted in the report were inconsistency in reporting compliance with requirements for displaying application-specific information, oral notification of workers, pesticide safety training, and monitoring retaliation. This inconsistency is due in part to the fact that none of the three most common inspections performed by CACs cover all of the eight key elements of WPS as listed in the Revised US EPA Worker Protection Field Inspection Pocket Guide (11). Table 6 lists these key elements and the corresponding sections of 3CCR.

Table 6: Eight Key Elements of WPS as Identified in the Revised US EPA Worker Protection Field Inspection Pocket Guide (11), and California's Corresponding Regulations[1]

Key WPS Elements	California Code of Regulations
Notification and posting of pesticide application	6618 and 6776
Application and entry restrictions	6762, 6770, 6772, 6774
Personal protective equipment for handlers and early entry workers	6732, 6736, 6738, 6771
Pesticide safety training	6724, 6764
Posted pesticide safety information	6723, 6723.1, 6726, 6761, 6761.1, 6766
Decontamination	6734 and 6768
Emergency medical assistance	6726 and 6766
Retaliation	6704

[1]Title 3, Division 6, California Code of Regulations

Table 7 lists the three types of inspections most commonly performed by CACs, and the elements of WPS that are covered in each report. The current level of reporting presents problems in complying with US EPA's requirements for reporting WPS compliance. Oral notification is only covered during a pest control records inspection, and PPE is covered only during a pesticide use monitoring inspection. Pesticide safety information, which includes hazard communication, is not included in pesticide use monitoring inspections. Retaliation is not covered in any of the inspections.

Table 7: Three Types of Inspections Most Commonly Performed by County Agricultural Commissioners and Elements of WPS Covered in Each Type of Inspection

Fieldworker Safety Inspection		Pesticide Use Monitoring Inspection		Pest Control Records Inspection	
Covered	Not Covered	Covered	Not Covered	Covered	Not Covered
Pesticide Safety Information	Application-specific Information	Personal Protective Equipment[2]	Pesticide Safety Information	Pesticide Safety Information	Personal Protective Equipment
Pesticide Safety Training[1]	Oral Notification	Pesticide Safety Training[2]	Oral Notification	Oral Notification	Posting
Decontamina-tion[1]	Retaliation	Decontamina-tion[2]	Retaliation	Handler & Fieldworker Training	Retaliation
Application and entry restrictions	Emergency Assistance	Emergency Assistance[2]	Application and entry restrictions	Application-specific Information	Application and entry restrictions
Posting	Personal Protective Equipment	Posting		Emergency Assistance[1]	Decontamina-tion

[1] Fieldworkers Only [2]Handlers only

Discussion

Hazard Communication and Application-Specific Display–
Analysis of the PISP database and Compliance Assessment Report revealed that the level of compliance with WPS hazard communication and application-specific display requirements is not at a desirable level. PISP data analysis also revealed that there is a need for greater consistency in reporting compliance with WPS elements as part of the investigation. CACs are required to submit illness investigation reports within 120 days from the date they are notified of a pesticide related illness/injury. They have commented that this is not always sufficient time for them to perform a complete investigation. If they are unable to complete all WPS elements of the

investigation in 120 days, they could so note in their narrative. At a later date, WH&S staff can verify, through the Enforcement database, if further violations were noted and what type of action was taken by the CAC. Only 23% of handler case investigations from 1997-1999 reported on compliance with hazard communication and application-specific display requirements; and of these, 32% were not in compliance. The Compliance Assessment Report revealed that compliance with hazard communication and application-specific display requirements for fieldworkers is low. According to this report, growers displayed PSIS A-9 only 48% of the time and displayed application-specific information only 23% of the time. FLCs complied with these requirements even less frequently, displaying PSIS A-9 46% of the time and providing application-specific information 22% of the time. To address this low compliance, DPR's annual Prioritization Plan for FY 2001/2002 targeted increasing the number of fieldworker safety inspections by 50% (8). In addition, a check-box for application-specific information has been added to the Fieldworker Safety Inspection form. At the time the assessment was underway the space for this information on PSIS A-9 was on page 3. When the low compliance with this requirement was brought to the attention of WH&S, PSIS A-8 and A-9 were revised. Now both the areas for emergency medical care information and location of application-specific information are located on page 1 of PSIS A-9. PSIS A-8 was revised to include the space for emergency medical information on the first page, along with a note to employers advising them that they were required to fill in additional information elsewhere in the document. Other problems noted in regards to displaying PSIS A-9 were that employers failed to assure that the leaflet was available in an area accessible and known to employees. Sometimes the leaflet was kept in a binder or a foreman's vehicle and the employees were not notified of its location.

One comment frequently heard from growers during the 2001 workshops was that the hazard communication leaflets, PSIS A-8 and A-9, were too technical for the workers to understand, and that the leaflets were frequently discarded in the trash by workers. Because of their remarks and concerns expressed by advocate groups, WH&S has begun work on a complete simplification and redesign of the PSIS.

Advocate groups have urged the establishment of a toll-free number for workers who want to access information about pesticides. WH&S consulted with San Luis Obispo County. They have had a toll-free pesticide hotline in place for three years, and have advertised its availability through various methods, including over Spanish radio. After three years, they have received a total of 12 calls. Due to this extremely low response, a toll-free line does not seem to be an effective way of delivering information to farmworkers.

Notification-
Since the current notification system is usually an oral one and relies on up to three different parties (see Appendix A) to relay information to the worker, it is easy to see that there may be breakdowns in the system. Different pest control applicators may be working in adjacent fields so that a crew from one may show up to work in one field while an application is scheduled in the next field, or due to unforeseen circumstances (equipment breakdown, weather, etc.), an applicator may change the application date and not get this information to the operator of the property in a timely manner. Misunderstandings about specific areas to be treated can occur between applicators and growers.

WH&S's analysis of 35 illness investigation reports identified as notification violations revealed that the breakdown in notification communication in these episodes was at the employer – employee level in 30 episodes, and that posting was required in 11 of these 30 episodes. In the remaining 19 early entry violation episodes, lack of notification was identified as the sole cause for the early entry violation. These 19 episodes had so little in common that it is difficult to make recommendations based on this analysis. However, four of these episodes would probably have been prevented had the applicator been required to notify the operator of the property of the application at the time the application was completed. Members of the agricultural production community support eliminating the 24-hour grace period for the completion notice, and requiring notification be in writing down to the operator of the property level. They see both of these measures as enabling them to do a better job of protecting their workers.

Data obtained from both PISP and the Enforcement/Compliance Action Summary Database indicated that Enforcement is achieving greater consistency in taking action when a notification violation occurs. Enforcement has also amended the Fieldworker Safety Inspection form to include questioning fieldworkers about notification as part of the reporting process. Emphasis needs to be placed on compliance with all the steps in the notification process. This can be achieved by requiring that notification be in writing down to the employer level (thus facilitating enforcement of notification requirements), working with CACs to place more emphasis on notification requirements during grower training sessions, and stressing the importance of continuing to consistently follow the Enforcement Guidelines. These guidelines are based on 3CCR Section 6130. According to this section, a serious violation is one which creates an actual health or environmental effect, and requires a fine in the amount of $401-$1,000. Based on this regulation, all notification violations resulting in pesticide related illness/injury are 'serious violations' and require the imposition of a fine of at least $401.

Retaliation

Both US EPA Region 9 and farm worker advocate groups have expressed concern that the Department has made little provision for monitoring retaliation against farmworkers. Questioning farmworkers about retaliation has not been a part of CAC's illness investigations in the past; therefore no relevant data are currently available. However, in 2001, WH&S and Enforcement formed a Training Liaison Committee to develop training materials to present to CAC staff on improving pesticide episode illness investigations. Included in the training are instructions on methods of interviewing farmworkers to lessen worker's concerns about employer retaliation. Investigators are to be trained in choosing acceptable interpreters, such as government employees, family members, or union representatives, neutral interview locations such as the CAC's office or the employee's home, and whom should be present during the interview (the investigator, the interpreter and the interviewee). Investigators are advised that employers or their supervisory employees should not be utilized as interpreters and that the interview should not be conducted in the employer's office even in the employer's absence. Additionally, investigators are to ask interviewees if they have experienced retaliation. If so, the worker is advised to contact a Division of Labor Standards Enforcement Office and furnished with a telephone number. In addition, Enforcement has developed a one-page WPS Inspection Report Supplement to be used during County Oversight Inspections. This form directs the investigator to question farmworkers about retaliation. Data gathered from these inspections will be used to gain a better understanding of the retaliation situation among California farmworkers.

Recommendations
The following are DPR's recommendations to improve worker safety.

Issue 1: Identify and evaluate problems in complying with notification requirements.
Findings: *Problems noted include communication breakdowns and lack of awareness of applications on neighboring operations, and with 24-hour allowance for applicator to notify grower that an application was completed. Enforcement actions in response to notification should be consistent with the Agricultural Civil Penalty Fine Guidelines*
Recommendations:

- Evaluate 3 CCR, Section 6618 (Notice of Applications), and Section 6619 (Pesticide Application Completion Notice) to determine if amendments should be made to improve clarity and enforceability.
  -Consider eliminating the 24-hour period for submitting a completion notice.
  -Consider requiring the crew supervisor to possess written verification of application information (e.g. application date, REI expiration date, pesticide name, location/site ID) on site when workers are within ¼ mile of a field with a REI in effect.
- Require grower to verify receipt of time of application completion in writing before allowing workers in field (methods may include but not be limited to FAX or e-mail).
- DPR should work with CACs both to conduct training sessions on notification requirements, and to emphasize the importance of consistency in following Agricultural Civil Penalty Fine Guidelines (a notification violation that results in worker illness/injury should automatically result in an ACP) (9).
- Amending fieldworker safety inspections to include evaluation of compliance with notification requirements. (This recommendation was initiated by the Enforcement Branch.)
- Require the operators of the property to develop a written notification plan. All parties involved should sign the plan. A written plan would allow for differences in operations, but ensure proper notification.
- Worker Health and Safety should evaluate PISP investigative reports involving early entry violations to ascertain the level of compliance with notification requirements.

Issue 2: Identify and evaluate problems in complying with hazard communication and application-specific display requirements, and methods to assess retaliation against agricultural workers.
Findings: *Problems noted include central location not well-defined, workers do not access the information, workers cannot understand the information, workers are afraid of retaliation for asking for information, maintaining the system is burdensome, and employers not completing the pesticide application records section of PSIS A-9 and A-8.*
Recommendations:

- Evaluate 3 CCR, Section 6761.1 (Application-Specific Information for Fieldworkers) to determine if amendments should be made to improve clarity and enforceability
  -Consider requiring the grower/labor contractor to provide workers with oral or written information at the work site of recent applications (e.g., REI expired within the last 7 days) made to the field.
  -If specific information is provided at the work site, consider eliminating display of

application-specific information at a central location since 3 CCR, Section 6761 (Hazard Communication for Fieldworkers) contains similar information.

- Define central location as being where workers gather, meet or work.
- WH&S should redesign the safety series to make the information more accessible to the farm worker community (in process).[1]
  -WH&S revised PSIS A-9 so that the pesticide applications records section is now on page 1. This same revision was made to PSIS A-8 along with a note, also on the front page, to employers advising them that they were required to fill in information elsewhere in the document (completed).[1]
- WH&S and Enforcement should develop training materials to train CAC staff on interview methods to use during pesticide related illness/injury investigations to lessen farmworkers' fears of retaliation (completed). [1]
- DPR's Enforcement branch should develop an inspection form to use in oversight inspections. To complete this form, the investigator must ask worker(s) if they have experienced retaliation (completed). [1]
- DPR's Enforcement Branch should encourage CACs to increase the number of Fieldworker Safety Inspections to address the low compliance with hazard communication requirements for fieldworkers and to assess barriers to compliance with application-specific information display requirements (completed). [1]

[1] WH&S and Enforcement began work on the items were that identified very early in the WPS analysis.

References:

1. Office of the Federal Register (1999) Title 40 Code of Federal Regulations (CFR), Parts 156 and 170. National Archives and Records Administration, US Government Printing Office, Washington, D.C. 20402-9328

2. California Department of Pesticide Regulation (1998) Title 3, Division 6, California Code of Regulations, California Department of Pesticide Regulation, 1001 I Street, Sacramento, California 95814

3. California Food and Agriculture Code, Office of Administrative Law. Available on the web at: www.oal.ca.gov (accessed August, 2001)

4. California Department of Pesticide Regulation (1996) WPS Rulemaking File WHS-96-1127-05, Vol. 1. Registration Library, 1001 I Street Sacramento, California 95814

5. US EPA Region 9 Cross Media Division Pesticide Program, Worker Protection Team (2001) US EPA Region 9 Worker Protection Standard Assessment California Program Report. 75 Hawthorne Street (CMD-4-3) San Francisco, California 94105-3901

6. Spencer, Janet R. (2001) Analysis of the Impact of the Federal Worker Protection Standard and Recommendations for Improving California's Worker Protection Program Regarding Field Posting (HS-1819). California Department of Pesticide Regulation, Worker Health and Safety Branch, 1001 I Street, Sacramento, California, 95814

7. Mehler, L. (2001) Case Reports Received by the California Pesticide Illness Surveillance Program, 1995-1999, in Which Health Effects on Agricultural Pesticides Handlers (Mixer/Loaders, Applicators, Flaggers, and People Maintaining Application Equipment) Were Definitely or Probably Attributed to Pesticide Exposure. California Department of Pesticide Regulation, Pesticide Illness Surveillance Program database query, Worker Health and Safety Branch, 1001 I Street, Sacramento, California 95814

8. California Department of Pesticide Regulation (2001) Compliance Assessment Report Pesticide Handler and Field Worker Safety Survey. California Department of Pesticide Regulation, Division of Enforcement, Environmental Monitoring and Data Management, 1001 I Street, Sacramento, California 95814

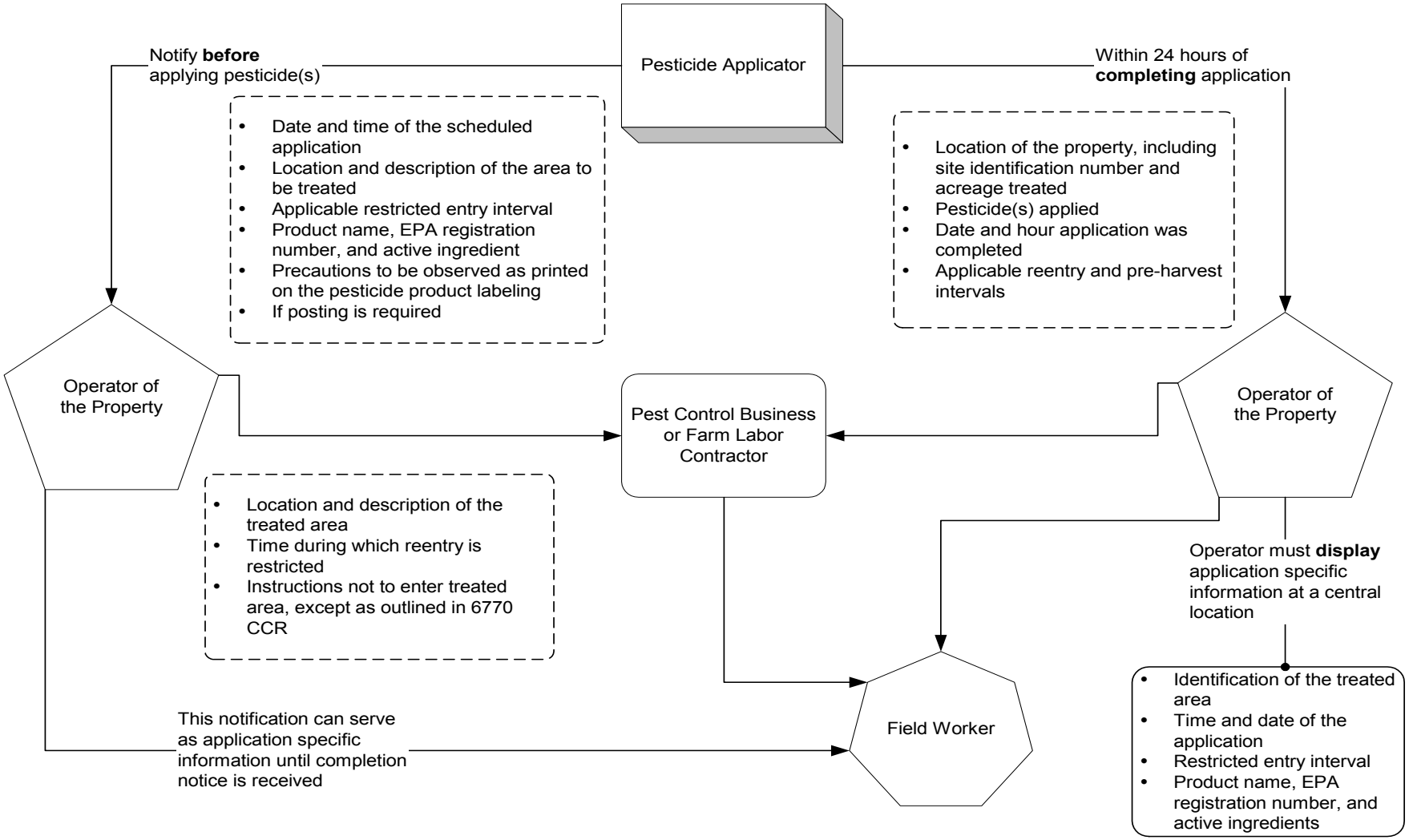
9. Pesticide Enforcement Branch and California Agricultural Commissioners and Sealers Association Co-Agency Committee (1994) Enforcement Guidelines – A Uniform Approach to Pesticide Use Enforcement Activities. California Department of Pesticide Regulation, Pesticide Enforcement Branch, 1001 I Street, Sacramento, California 95814

10. Pesticide Enforcement Branch (2001) Enforcement/Compliance Action Summary Database. California Department of Pesticide Regulation, Pesticide Enforcement Branch, 1001 I Street, Sacramento, California 95814

11. United States Environmental Protection Agency (1996) Revised Worker Protection Field Inspection Pocket Guide. Agriculture Branch, agriculture Ecosystems Division, Office of Compliance in EPA's Office of Enforcement and Compliance Assurance

12. Wells, James W. (1997) Letter dated August 22 to Felicia Marcus, U.S. Environmental Protection Agency, 75 Hawthorne Street, San Francisco, California 94105

13. California Department of Pesticide Regulation (1996) WPS Rulemaking File WHS-96-1127-05, Vol. 1. Registration Library, 1001 I Street, Sacramento, California 95814

14. Office of the Federal Register, Federal Register, vol. 57, no. 163, Environmental Protection Agency 40 CFR Parts 156 and 170. US Government Printing Office, Washington, D.C. 20402-9328

Appendix A
FLOW OF INFORMATION IN NOTIFICATION PROCESS