

**Department of Pesticide Regulation  
Environmental Monitoring Branch  
1001 I Street, P.O. Box 4015  
Sacramento, California 95812**

**October 2012**

**Study 280: Project to Assess the Implementation and Impacts of the Ground Water  
Protection Regulatory Program**

**I. Introduction**

The Pesticide Contamination Prevention Act (PCPA) (Statutes of 1985, Chapter 1298, Section 1) added sections 13141–13152 to the Food and Agricultural Code (FAC). The purpose of the PCPA is to prevent pesticide pollution of the ground water aquifers of the state that may be used for drinking water supplies. 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 pollution could be controlled. Between 1989 and 2001, the Department of Pesticide Regulation (DPR) adopted mandatory mitigation measures that pertained to statewide applications of aldicarb and bentazon and applications of atrazine and prometon in Pesticide Management Zones (PMZs). DPR adopted a combination of mandatory and advisory mitigation measures that pertained to the use of simazine, bromacil, diuron, and norflurazon in PMZs. PMZs were one-square mile sections of land around contaminated wells where pesticide-specific mitigation measures were applied. By 2003, PMZs had grown to encompass about 313,000 acres statewide.

In 2004, DPR increased the area under regulation to 2.4 million acres by adopting mandatory mitigation measures<sup>1</sup> that applied to the use of pesticides regulated as ground water contaminants<sup>2</sup> inside all canals, ditch banks, and artificial recharge basins and within certain square-mile sections of land identified as ground water protection areas (GWPA). The new GWPA included all the former PMZs as well as sections of land with no reported detections but with soil types and depths-to-ground water that are characteristic of contaminated areas. All GWPA have a depth-to-ground water of 70 feet or shallower. Leaching GWPA are characterized by coarse, permeable soils that allow pesticide residues to move downward through the soil profile with leaching water. Runoff GWPA have impermeable hardpan layers or relatively impermeable clay soils that cause pesticide residues to move laterally until the surface or subsurface runoff reaches an area that is permeable or has a direct connection to ground water. The mandatory mitigation measures are designed to prevent over-irrigation in leaching GWPA and to manage or prevent the offsite movement of contaminated irrigation or rain water in runoff GWPA.

Before using a regulated pesticide in a leaching or runoff GWPA, a property operator or, in some cases, a licensed pest control business must obtain a permit from the County Agricultural

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<sup>1</sup> Title 3, California Code of Regulations sections 6000 and 6487.1 – 6487.5.

<sup>2</sup> Title 3, California Code of Regulations section 6800(a) includes the following: atrazine, bentazon (Anagram®), bromacil, diuron (except for products with less than 7% diuron that are applied to foliage), norflurazon, prometon, and simazine.

Commissioner (CAC) that identifies the use site(s), pesticide(s) to be applied, and mitigation measure(s) that must be followed. As a condition of the permit, the property operator or pest control business must notify the CAC at least 24 hours before applying pesticides listed on a permit. This advance notice allows the CAC to inspect the application site to determine the adequacy of the proposed mitigation measures and to amend the permit when additional protections are required. CACs also conduct application and records inspections to ensure compliance with the permit requirements.

DPR provided training to the CACs and the regulated community, including growers, pest control businesses, and agricultural pest control advisers, to prepare them for the implementation of the new ground water protection regulations in 2004. Since then, DPR has seen a decrease in concentrations of certain regulated pesticides in ground water. The precise reason for this decrease has not been determined nor have the impacts of the regulations on the CACs, and the regulated community been assessed.

This project was initiated to evaluate the effectiveness of the Ground Water Program (Program) in preventing and mitigating ground water contamination.

## **II. Objectives**

The objectives of this project are to:

- Determine how Program regulations and permit conditions have changed herbicide use patterns;
- Assess the effectiveness of Program regulations
- Identify Program modifications or improvements to assist growers and CACs.

The results will be used to develop future program recommendations to address actual or anticipated impacts.

## **III. Personnel**

- Project Supervisor: Lisa Quagliaroli
- Project Leader: Cindy Garretson
- Field Coordinator: Michelle Wong
- Senior Scientist: John Troiano
- Project Staff: One Enforcement staff from the Central Regional Office and one staff from the Program in the Environmental Monitoring Branch.

Questions concerning this monitoring project should be directed to Lisa Quagliaroli, Senior Environmental Scientist, at 916-445-3677 or by e-mail at [lquagliaroli@cdpr.ca.gov](mailto:lquagliaroli@cdpr.ca.gov).

## IV. Study Plan

The following lists the main tasks that will be undertaken to achieve the study objectives.

### 1. Pesticide Use Assessment

Pesticide use data will be used to guide the selection of sites and counties and to make an initial assessment of the impacts of the Program regulations on pesticide use practices in GWPAs.

Date - and location-specific reporting – as required for uses on agricultural crops - allows the Program to accurately assess current and historical pesticide use practices within defined areas, such as GWPAs, and to identify potential grower participants. Pesticides applied to noncrop sites, such as engineered rights-of-way, are reported as monthly totals summarized by county with no application date or location information provided. This reporting method may pose challenges to the goals of this analysis and project staff may decide to exclude this use category from the initial phase of this project to allow time to develop an appropriate method of analysis.

### 2. Study Area Selection

Target sites, pesticides, counties, and growers will be selected based on the following criteria:

- Agricultural sites – up to three sites (agricultural crops and possibly engineered rights-of-way) in GWPAs in the San Joaquin Valley with high historical or current use of the regulated pesticides.
- Pesticides – those regulated as ground water contaminants with high historical or current use on the target sites in GWPAs in the San Joaquin Valley.
- Counties – up to three counties with large numbers of GWPAs and historically high use of the regulated pesticides on the target sites.
- Permittees – those who have obtained permits and applied regulated pesticides to target sites in GWPAs in selected counties to determine if they have continued to use these pesticides or switched to other pesticides following the 2004 regulation changes.

### 3. GWPA Restricted Material Permits

Study staff to collaborate with county staff in selected counties in the review of GWPA restricted materials permits to:

- Assess changes in the number or type of permits requested by growers in GWPAs.
- Identify typical mitigation measures specified on the permits. Staff will also attempt to compare the mitigation measures currently implemented by applicators to those that were used before the 2004 ground water protection regulations were adopted. If there are a large number of permittees reporting use of regulated pesticides in a county, our priority will be to evaluate those with the largest amount of reported use.
- Understand the CACs' procedures for evaluating, approving and enforcing restricted materials permits for the use of regulated pesticides in GWPAs.
- Identify possible improvement to permits in GWPAs.

#### 4. Stakeholder Interviews

- Study staff will interview permittees that use regulated pesticides in GWPA's to determine if the regulation changes impacted their pesticide use and/or cultural practices and whether they have difficulties implementing the selected mitigation measures or reporting their pesticide use.
- Staff will interview permittees who appear to have changed their pesticide use practices following the 2004 regulatory changes to determine the reasons for and the potential impacts of these changes.
- Study staff will interview local University of California Extension Specialists, licensed pest control advisers, and/or licensed pesticide dealers to discuss typical grower pesticide use and cultural practices in GWPA's in their areas.
- Study staff will prepare interview questionnaires and record review forms to ensure consistency in these activities. The number of interviews conducted will be based on study staff resources and stakeholder availability.

#### **V. Project Communication**

Emphasis will be placed on maintaining a high degree of communication between study staff, Enforcement and Environmental Monitoring Branch management, and participating CACs throughout this study.

Site visits will take place as county agricultural commissioner and stakeholder operations allow and will be planned three to four weeks in advance. Study staff will notify county agricultural commissioners of planned site visits to permittees, University of California Extension Specialists, pest control advisers, and/or pesticide dealers located in their counties. CAC staff may accompany study staff on these site visits.

The Project Leader will provide e-mail updates to Enforcement and Environmental Monitoring management and CACs, as appropriate, following each site visit and at important project milestones (i.e.; data analysis initiation, report development, etc.).

The Project Leader will route draft project memorandums and reports to Enforcement and Environmental Monitoring Branch management and participating CACs for their review and feedback before issuing final documents.

#### **VI. Data Analysis**

The results of these reviews and interviews will be used to assess the ground water protection program to identify program strengths, deficiencies and/or obstacles to implementation by growers and/or CACs. Implementation strengths, deficiencies and obstacles and proposed recommendations will be verified with participating CACs and DPR Enforcement Branch staff prior to producing a final report.

## VII. Timetable

This timetable is subject to change and depends on availability of Environmental Monitoring and Enforcement Branch staff as well as the availability of participating CACs, growers and other cooperators.

- Pesticide Use Data Review – complete by January 2013
- Develop CAC Survey Questions – complete by January 2013
- CAC Survey and Permit Reviews – complete by July 2013
- Develop Grower/Adviser Survey Questions – complete by August 2013
- Grower and/or Adviser Interviews – complete by December 2013
- Final Report – complete by June 2014

## VIII. Estimated Project Budget

**Table 1. Estimated Project Budget**

Activity	Units	Estimated Cost <sup>3</sup>
Pesticide Use Data Review	300 hours	\$6500
CAC Permit Reviews & Grower Interviews	920 hours	\$20,000
Final Report	500 hours	\$11,000
Travel	72 days	\$9400
Total Estimated Costs		\$47,000

bcc: Quagliaroli Surname File

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<sup>3</sup> Costs and assumptions – Scientific Aid - \$10.00 / hour at 50% of total hours; Environmental Scientist, Range C - \$33.00 / hour at 45% of total hours; Senior Environmental Scientist, Range C - \$38.00 / hour at 5% of total hours; Travel - \$130 / day. Assume six counties at four days / review and six growers at two days / review with two-person staff teams plus questionnaire preparation.