



**UNIVERSITY OF  
CALIFORNIA**

Division of Agriculture  
and Natural Resources

<http://anrcatalog.ucdavis.edu>

In partnership with



<http://www.nrcs.usda.gov>

**Farm Water  
Quality Planning**

*A Water Quality and  
Technical Assistance Program  
for California Agriculture*

This REFERENCE SHEET is part of the **Farm Water Quality Planning (FWQP)** series, developed for a short course that provides training for growers of irrigated crops who are interested in implementing water quality protection practices. The short course teaches the basic concepts of watersheds, nonpoint source pollution (NPS), self-assessment techniques, and evaluation techniques. Management goals and practices are presented for a variety of cropping systems.



## Reference:

# Ground Water Protection Areas and Wellhead Protection Draft Regulations for California Agriculture

**MARY BIANCHI** is UC Cooperative Extension Farm Advisor, San Luis Obispo County.

## WHAT IS A GROUND WATER PROTECTION AREA (GWPA)?

In draft regulations, a Ground Water Protection Area is defined as “an area of land that has been determined by the director [of the Department of Pesticide Regulation] to be sensitive to the movement of pesticides to ground water. . . The determination of a Ground Water Protection Area is based on factors such as soil type, climate, and depth to the ground water, that are characteristic of areas where legally applied pesticides or their breakdown products have been detected and verified in ground water.”

A summary of the proposed regulations, along with effective dates, will be available online in 2003 at <http://www.cdpr.ca.gov> under Laws and Regulations. The proposed regulations further delineate Ground Water Protection Areas into two categories:

- *Leaching Ground Water Protection Areas*, where pesticide residues move from the soil surface downward through the soil matrix with percolating water to reach ground water. Soils in these areas are coarse with relatively rapid infiltration rates.
- *Runoff Ground Water Protection Areas*, where pesticide residues are carried in runoff water to more direct routes to ground water, such as dry wells or drainage wells, poorly sealed production wells, or soil cracks, or to areas where leaching can occur. Soils in these areas may have a hardpan layer and/or low infiltration rates.

## AM I FARMING IN A GROUND WATER PROTECTION AREA?

You can check this web site for maps, by county, of sections designated as GWPAs: [http://www.cdpr.ca.gov/docs/empm/gwp\\_prog/gwpamaps.htm](http://www.cdpr.ca.gov/docs/empm/gwp_prog/gwpamaps.htm). You can also check the following web site for lists of sections, by county, of GWPAs: [http://www.cdpr.ca.gov/docs/empm/gwp\\_prog/gwreglst.pdf](http://www.cdpr.ca.gov/docs/empm/gwp_prog/gwreglst.pdf).

## HOW DOES A GWPA DIFFER FROM A PESTICIDE MANAGEMENT ZONE?

Under current regulations, Pesticide Management Zones are created *after* pesticide residues are found in ground water as a result of legal agricultural use. These areas are 1-square-mile sections in which one or more pesticides have been detected in ground water, and are therefore identified as vulnerable to pesticide contamination. The California Department of Pesticide Regulation (DPR) is planning to change the crite-

ria for identifying vulnerable areas in order to further protect groundwater resources from pesticide contamination. DPR proposes to re-designate these Pest Management Zones as Ground Water Protection Areas (GWPA). All current Pesticide Management Zones will become GWPA, but additional areas will be identified GWPA based on soil and depth-to-groundwater data. These criteria have been developed based on a statistical analysis of over 15 years of well sampling data compiled by DPR.

The statistical analysis was conducted in two steps. First, geological characteristics were identified for vulnerable areas where pesticides had been detected in ground water. Second, analysts developed a classification method for sections of land that did not contain well sampling data but had geologic characteristics similar to those of vulnerable areas. This determination was based on a combination of soil data obtained from the USDA Natural Resources Conservation Service and data generated for estimated depth to ground water.

Based on this information, GWPA are sections of land that

- have had pesticides detected in ground water, or
- contain predominantly coarse soils and/or hardpan layers in the soil profile, and have an estimated depth to ground water of 70 feet or less.

## HOW WILL THIS AFFECT THE WAY I FARM?

If both of the following are true

- your operation is located within a GWPA (either a leaching GWPA or a runoff GWPA) and
- you want to use any of the materials on the attached draft list of pesticides regulated to protect ground water,

then you must

- obtain a restricted use materials permit for possession or use of the material in a Ground Water Protection Area and
- comply with the management practices specified by regulation in your restricted use materials permit.

All detected pesticides will be regulated by permit within a GWPA. These pesticides are listed in section 6800(a) in Title 3 of the California Code of Regulations. A current list as of this publication's release appears at the end of this publication.

## WHAT MANAGEMENT PRACTICES ARE BEING CONSIDERED FOR A "LEACHING" GWPA?

Leaching GWPA contain coarse soils with relatively rapid infiltration rates. Listed materials may be applied by a permitted applicator if **any one** of the following management practice options is met, as designated on the permit, for 6 months following application of the pesticide:

*Option 1: No irrigation water is applied for 6 months.*

*Option 2: No contact with downward-leaching irrigation water.* Pesticides are applied to the planting bed or the berm above the level of irrigation water in the furrow or basin so it has no contact with leaching irrigation water.

*Option 3: Irrigation management.* Manage irrigations so that the ratio of the amount of irrigation water applied divided by the net irrigation requirement is 1.33 or less (leaching fraction of no greater than 33%).

## WHAT MANAGEMENT PRACTICES ARE BEING CONSIDERED FOR A "RUNOFF" GWPA?

Runoff GWPAs contain soils that have a hardpan layer or low infiltration rate. Products containing active ingredients that are regulated to protect ground water may be applied by a permitted applicator if **any one** of the following management practices, designated on the permit, is met:

- *Soil disturbance.* The soil is disturbed within 7 days before pesticide application, by using a disc, harrow, rotary tiller, or other mechanical method. (Note: This restriction does not apply to any pesticide applied as a band treatment [see Band treatment, below].)
- *Incorporation of the pesticide.* The pesticide is incorporated on at least 90% of the area treated within 7 days after pesticide application, by a mechanical method or by low flow irrigation (¼ to 1 inch of water), including chemigation if allowed by the label, provided that no runoff occurs. (Note: This restriction does not apply to any pesticide applied as a band treatment [see Band treatment, below].)
- *Band treatment.* The pesticide is applied as a band treatment, not to exceed 33% of the distance between crop rows.
- *Timing of application.* The pesticide is applied between April 1 and July 31.
- *Control of runoff:*
  - *Retention on field.* All irrigation runoff and all precipitation on and drainage through the field are retained onsite for 6 months after application (the retention area on the field should not have a percolation rate of more than 0.2 inch per hour), or
  - *Retention in holding areas off the field.* All irrigation runoff and all precipitation on and drainage through the field are stored offsite for 6 months after application (provided the holding area does not have a percolation rate of more than 0.2 inch per hour).

## HOW WILL THIS AFFECT PEST CONTROL ADVISERS?

Groundwater protection advisories written by pest control advisers would no longer be required. The responsibilities for writing recommendations would not change.

## WHAT REGULATIONS ARE BEING CONSIDERED REGARDING WELLHEAD PROTECTION?

Under proposed regulations, the following activities would be prohibited within 100 feet of an unprotected well (including domestic, municipal, agricultural, dry or drainage, monitoring, or abandoned wells):

- mixing, loading, and storage of pesticides
- rinsing of spray equipment or pesticide containers
- maintenance of spray equipment that could result in spillage of pesticide residues on the soil
- application of pre-emergent herbicides

These prohibitions would not apply to wells that are

- sited above the grade of drainage so that runoff water from irrigation or rainfall cannot contact any part of the well, including the concrete pad or foundation, or
- protected by a berm that prevents the movement of surface runoff water to the well.

## PESTICIDES REGULATED TO PROTECT GROUND WATER

Chemicals that have been detected in ground water or whose breakdown products have been detected in ground water due to legal agricultural use or that are determined to have a high potential to move to ground water are listed in section 6800(a) in Title 3 of the California Code of Regulations. Except for Bentazon, pesticide products labeled for agricultural, outdoor, institutional, or outdoor industrial use that contain any of the following active ingredients would require a permit when used in a GWPA (all uses of Bentazon require a permit).

Atrazine (Aatrex)	Bentazon (Basagran)	Bromacil (Hyvar, Krovar)
----------------------	------------------------	-----------------------------

Diuron, except for products with less than 7% diuron that are applied to foliage (Ginstar, Krovar)

Norflurazon (Solicam)	Prometon (Pramitol)	Simazine (Princep)
--------------------------	------------------------	-----------------------

The chemicals listed below are considered to have the potential to move to ground water. They would not currently require a groundwater protection permit.

Acephate	Diazinon	Imidacloprid	Oryzalin
Acrolein	Dichlobenil	Iprodione	Oxydemeton-methyl
Alachlor	Dichloran	Isoxaben	Parathion
Azinphos-methyl	Diethatyl-ethyl	Linuron	Pebulate
Bensulide	Dimethoate	Metalaxyl	Phorate
Butylate	Diquat dibromide	Metaldehyde	Prometryn
Carbaryl	Disulfoton	Methiocarb	Propyzamide
Carbofuran	EPTC	Methomyl	Pyrazon
Chloropicrin	Ethofunesate	Methyl isothiocyanate	Rimsulfuron
Chlorothalonil	Ethoprop	Metolachlor	Sulfometuron-methyl
Chlorsulfuron	Fenamiphos	Metribuzin	Tebuthiuron
Cyanazine	Fluometuron	Molinate	Triallate
Cycloate	Fonofos	Napropamide	Triflumizole
Dazomet	Fosetyl-Al technical	Naptalam, sodium salt	Vernolate
2,3-D, dimethylamine salt	Imazethapyr	Nitrpyrin	Vinclozolin

## FOR MORE INFORMATION

You'll find detailed information on many aspects of field crop production and resource conservation in these titles and in other publications, slide sets, CD ROMs, and videos from UC ANR:

*Nutrients and Water Quality*, slide set 90/104

*Protecting Groundwater Quality in Citrus Production*, publication 21521

*Sediments and Water Quality*, slide set 91/102

To order these products, visit our online catalog at <http://anrcatalog.ucdavis.edu>. You can also place orders by mail, phone, or fax, or request a printed catalog of publications, slide sets, CD ROMs, and videos from

University of California  
Agriculture and Natural Resources  
Communication Services  
6701 San Pablo Avenue, 2nd Floor  
Oakland, California 94608-1239

Telephone: (800) 994-8849 or (510) 642-2431

FAX: (510) 643-5470

E-mail inquiries: [danrcs@ucdavis.edu](mailto:danrcs@ucdavis.edu)

An electronic version of this publication is available on the ANR Communication Services Web site at <http://anrcatalog.ucdavis.edu>.

### Publication 8063

© 2002 by the Regents of the University of California, Division of Agriculture and Natural Resources. All rights reserved.

The University of California prohibits discrimination against or harassment of any person employed by or seeking employment with the University on the basis of race, color, national origin, religion, sex, physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or status as a covered veteran (special disabled veteran, Vietnam-era veteran or any other veteran who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized).

University Policy is intended to be consistent with the provisions of applicable State and Federal laws.

Inquiries regarding the University's nondiscrimination policies may be directed to the Affirmative Action/Staff Personnel Services Director, University of California, Agriculture and Natural Resources, 300 Lakeside Drive, 6th Floor, Oakland, CA 94612-3550 (510) 987-0096. **For information about obtaining this publication, call (800) 994-8849. For information about downloading this publication, telephone (530) 754-5112.**

pr-11/02-WJC/VFG



This publication has been anonymously peer reviewed for technical accuracy by University of California scientists and other qualified professionals. This review process was managed by the ANR Associate Editor for Natural Resources.