

Develop Holding Pond Mitigation Practices to Prevent Herbicide Movement to the Ground Water. Final Report to DPR. Prichard, D., L. Schwankl, and M. Canevari. EH 04-03. 2004.

Abstract

Pesticide residues have been detected in a contiguous area of shallow ground water near Tracy, in San Joaquin County, California. The area contaminated with residues of currently registered pesticides represents 6 square miles. This area could increase as more wells are sampled in adjacent sections. Commonly detected pesticide active ingredients are atrazine, diuron, and hexazinone, which are pre-emergence herbicides. The contaminated area has been determined through methodical sampling of mostly domestic, single family wells. Crops grown in this area are alfalfa in rotation with row crops such as beans. Since Hexazinone could have only been used on alfalfa, agricultural use was indicated as the source for contamination. Diuron is also used on alfalfa but, along with atrazine, it could be used on other rotational crops grown in the area. Thus, there are numerous non-point sources for potential offsite movement to ground water.

In response to these detections, the California Department of Pesticide Regulation (DPR) conducted a cooperative study with Terry Prichard, a University of California Cooperative Extension Irrigation Specialist and Mick Canevari, a UCCE Weed Farm Advisor, to determine the exact pathway for movement of the residues to ground water. The study was conducted in a cooperating grower's field. The soil was a cracking clay soil so movement could have been through the large cracks formed in the soil. Soil coring conducted throughout the spring indicated very little downward movement of residues of diuron and hexazinone that were applied in December. Most of the fields in this area have ponds located on one end of the field to collect rain and irrigation runoff water. Measurements of the water movement from the ponds to the shallow ground water indicated that this was the most direct route for residues in the runoff water to contaminate ground water.

One mitigation measure is to re-circulate water collected in the ponds by pumping the water back onto the field. This proposed study will develop the pond water management strategy and provide data to demonstrate the effectiveness of those procedures. Increased awareness and management of pond water will result in decreased ground water contamination by preemergence herbicide residues.