

California Department of Food and Agriculture
Environmental Monitoring and Pest Management

1220 N Street, Room A-149

Sacramento, CA 95814

April 23, 1990

ANNUAL GROUND WATER MONITORING FOR ALDICARB,
ALDICARB SULFOXIDE AND ALDICARB SULFONE IN HIGH USE AREAS OF
CALIFORNIA

1. Introduction

Aldicarb is a soil-applied systemic insecticide used to control insects, mites and nematodes on cotton, sugar beets, potatoes, dry beans and ornamental plants. In the early 1980's, the agricultural use of aldicarb in Del Norte County resulted in ground water contamination. In 1988, aldicarb sulfoxide and aldicarb sulfone were also found in Humboldt County triggering the detection response process of the Pesticide Contamination Prevention Act (AB2021). An investigation determined that the ground water contamination in Humboldt County was the result of legal agricultural use (Oshima, 1988).

Due to the known potential for aldicarb to leach through soil to ground water, the Environmental Hazards Assessment Program was asked to conduct monitoring in other high use areas of the state in the fall of 1989. None of the 49 wells sampled in 9 counties

contained aldicarb, aldicarb sulfoxide or aldicarb sulfone (Weaver, 1989). Partly as a result of that well survey and the fact that aldicarb is no longer registered for ground application in Humboldt and Del Norte Counties, the Director determined that no pollution or threat of pollution exists from currently registered uses of aldicarb (CDFA, 1989). However, in order to comply with the "preventative spirit" of AB 2021, the Department of Food and Agriculture will continue to monitor ground water for aldicarb and its breakdown products in California.

11. Objective

To test for the presence of aldicarb, aldicarb sulfoxide and aldicarb sulfone in ground water by annually monitoring in counties where repeated high usage of aldicarb has been reported.

III. Personnel

Sampling will be conducted by the California Department of Food and Agriculture's Environmental Hazards Assessment Program. Key EHAP personnel are as follows:

Don Weaver - Project Leader

John Troiano - Senior Staff Scientist

Joan Fleck - Field Sampling

Nancy Miller - Lab Liaison/Quality Control

Madeline Ames - Agency and Public Contact

**ALL QUESTIONS CONCERNING THIS STUDY SHOULD BE DIRECTED TO
MADELINE AMES AT (916) 324-8916, ATSS 454-8916.**

IV. Study Design

Pesticide use report information will be reviewed and counties with the highest reported use of aldicarb will be selected for monitoring. Within each county, areas of high use will be identified by plotting pounds of active ingredient applied on a township-range-section basis. Soil type and known depth to ground water will also be used in the selection of sampling sites so that treated areas with porous soils and shallower ground water tables will be selected first. A total of 50 wells will be sampled each year with the number of wells sampled per county depending upon their availability. Preference will be given to properly sealed domestic wells that are shallow in depth, have

well logs and are located downgradient from areas of high al-
dicarb use.

V. Sampling Methods

Well sampling will be conducted using standard EHAP procedures
(Sava, 1986). Five replicate well water samples and one field
blank sample will be collected per well in one liter
polypropylene bottles. Samples will be placed immediately on dry
ice and frozen until analyzed.

VI. Chemistry Methods/Quality Control

Primary analysis will be performed by the CDFA laboratory using HPLC with a fluorescence detector. Positive detections will be confirmed by GC with a thermionic specific detector. A second laboratory will also be used for sample confirmations. The primary, backup and field blank samples will be analyzed for aldicarb, aldicarb sulfoxide and aldicarb sulfone with a minimum detection limit of 0.1 parts per billion.

VII. Timetable

Field Sampling - September

Chemical Analysis - October

Report - December

VIII. Budget

Personnel: Seasonal work hours (300 hours x \$8.00/hour)=\$2,400.00

Operating Expenses: Per diem (8 people x 4 nights) = \$2,688.00

Vehicle (3000 miles x .26 mile)=\$ 780.00

\$3,468.00

Chemical Analysis:

Primary Analysis

50 wells x 3 samples/well x \$200/sample = \$30,000.00

QC = 15 samples x \$200/sample = \$ 3,000.00

Confirmation Analysis

15 samples x \$200/sample = \$ 3,000.00

36,000.00

TOTAL=\$41,868.00

References

California Department of Food and Agriculture, 1989. Memo to Tobi Jones: Director's Response Concerning Aldicarb Pursuant to AB 2021. California Department of Food and Agriculture, Sacramento, CA.

Oshima, R. 1988. Memo to Tobi Jones: Detection of Aldicarb Sulfone and Aldicarb Sulfoxide in Ground Water, and Notice of Agricultural Use Determination for Aldicarb, Aldicarb Sulfone and Aldicarb Sulfoxide. Environmental Hazards Assessment Program, California Department of Food and Agriculture, Sacramento, CA.

Sava, R. 1986. Guide to Sampling Air, Water, Soil and Vegetation for Chemical Analysis. California Department of Food and Agriculture. Sacramento, CA.

Weaver, D. 1989. Memo to John Sanders: Completion of Well Survey for Aldicarb, Aldicarb Sulfoxide and Aldicarb Sulfone in Nine Counties. Environmental Hazards Assessment Program, California Department of Food and Agriculture, Sacramento, CA.