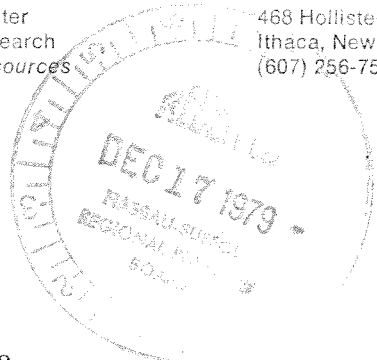


COOPERATIVE EXTENSION NEW YORK STATE

Cornell University • State University of New York • U.S. Department of Agriculture

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December 13, 1979

MEMORANDUM

TO: Lucinda A. Noble
FROM: Keith S. Porter, Senior Extension Associate
SUBJ: Aldicarb; update to memorandum of September 5, 1979

KSP

Since the memorandum of September 5, 1979, work has been urgently undertaken by numerous agencies. Cornell/Cooperative Extension personnel have an integral role in this work and have provided considerable leadership as indicated briefly herein. The work includes groundwater sampling, an epidemiological survey, and evaluation of the movement of Aldicarb through the soil and groundwater.

Concern about the problem has increased greatly. Nearly 300 samples from 145 wells have now been analyzed. Thirty-five percent of these contain Aldicarb. Eighteen percent have concentrations greater than 7 ppb, the recommended New York State guideline for drinking water. Five public water supply and seventeen private wells have been closed. It is possible the problem is worse than indicated by these numbers, because the sampling has included wells geohydrologically unlikely to be contaminated.

There is mounting pressure on the Suffolk County Health Department from residents of Eastern Long Island who wish to be convinced there is no risk to their health, or assurance that corrective action is being taken. Apparently, the Health Department has even been asked to identify the parties responsible so they can be sued.

Potato farmers are also worried. The farmers maintain, probably correctly, that they are dependent on the use of the pesticide to produce economically viable crops. If the use of Aldicarb were suspended, the farmers claim the effect would be catastrophic.

Unfortunately there are signals that public anxieties are being aggravated, possibly in an unwarranted manner. For example, in the epidemiological survey, urine samples were found to contain Aldicarb. Apparently a few individuals have begun to claim they have impaired health due to pesticides. It should be noted that at least one other pesticide has reached groundwater. Of twenty-four groundwater samples analyzed for Furaden, eighteen were found to be positive.

Staff from Cornell and Cooperative Extension are assessing the problem, and are formulating management responses, as briefly indicated in the following table:

<u>Staff Member</u>	<u>Office</u>	<u>A Principal Involvement</u>
James E. Dewey	Chemical-Pesticides Program	Potato Advisory Committee - evaluating the management of Aldicarb - policy
Randy Greider	Suffolk County Extension	Potato farmers - liaison and information
Keith S. Porter	Center for Environmental Research	Government agencies - liaison and information between various groups and industry - evaluation
William J. Sanok	Suffolk County Extension	Farmers/Health Department - field assistance with surveys - management
Wilbur Selleck	L.I. Hort. Res. Lab.	Manufacturers/Health Dept. - evaluation of environmental fate and sampling
Marie Semel	L.I. Hort. Res. Lab.	Farmers - pesticide evaluation and management
Joseph B. Sieczka	Dept. of Veg. Crops	Potato Advisory Committee - evaluating management needs
Ward M. Tingey	Dept. of Entomology	Potato Advisory Committee - evaluating management needs

The Cornell/Cooperative Extension initiatives fall into three broad activities:

1. Through several of the staff members, and the Potato Advisory Committee, support has already been obtained from farmers to develop an application regime which would reduce the amount of Aldicarb used, and the fraction which leaches to groundwater.
2. The environmental fate of several other pesticides is now being assessed by Dr. Selleck, working with the manufacturing companies concerned. Bill Sanok and members of the Water Resources Program are assisting government departments in determining the extent of the groundwater contamination.
3. The Water Resources Program has taken a lead in forming a Steering Committee. The initial aim was to ensure that all agencies concerned were represented. For example, one regulatory agency was originally reserved about consulting the N.Y.S. Department of Agriculture and Markets. As events have clearly proved to all, this Department has a vital role. Another aim is to coordinate the technical work being performed. A third aim is to insure the concerns of the regulatory agencies and of the agricultural industry receive adequate consideration by USEPA.

With respect to continuing efforts, it is the consensus of the Cornell/Cooperative Extension group that we have a need and opportunity to:

1. Prepare an Extension position paper representing our best understanding of the present problem and needs.
2. Seek further resources to continue evaluation of the fate of pesticides applied to light soils which overlay aquifers.
3. Explore as a matter of urgency alternative pest control programs for the Colorado Potato Beetle and the Golden Nematode.

cc: D. Bouldin                      G. Levine  
D. Call                              R. Loehr  
J. Dewey                            D. Pimentel  
T. Hullar                            W. Sanok  
L. Koppelman                        W. Selleck  
R. Kuhrs                             D. Smith

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Minutes of Meeting of Aldicarb Committee on  
December 5, 1979

MEETING: Aldicarb program on Long Island

PLACE : Cooperative Extension, Riverhead, N.Y.

DATE : December 5, 1979

ATTENDANCE:

Cooperative Extension - Suffolk County

Randy Greider - Potato program  
James M. Pike - Water Resources Program  
William J. Sanok - Agricultural Program

Cornell University

James E. Dewey - Chemicals/Pesticides Program  
Keith S. Porter - Center for Environmental Research  
Maurie Semel - Dept. of Entomology/LIHRL  
Joseph B. Sieczka - Dept. of Vegetable Crops  
Ward M. Tingey - Dept. of Entomology

Intera

David Ward - Consultant

N.Y.S. Department of Agriculture and Markets

Walter P. Brown  
Robert Mungari - Division of Plant Industry

N.Y.S. Department of Environmental Conservation

Anthony Candela - Long Island Regional Office

N.Y.S. Department of Health

Al Reilly - White Plains Office  
Judith Schreiber - Toxics, Albany

Suffolk County Department of Health

Thomas Martin  
Dennis Moran  
Dr. Malfonz H. Zaki

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USEPA - BTSFD

Coleman Hall - Beltsville Lab., Md.

USEPA - Hazard Evaluation Division

Robert F. Carsel - Environmental Fate Branch  
 Ronald Ney - Environmental Fate Branch  
 Hale Vandermeer - Health Effects Branch

USEPA - Region II

Robert Williams - Water Supply Branch

US Geological Survey

Edward Koszalka - Syosset Office  
 Bronius Nemicken - Syosset Office

I. Keith Porter opened the meeting with a review of the three projects being undertaken with respect to Aldicarb:

1. Groundwater sampling for the health department
2. The Epidemiological Survey
3. The Aldicarb modelling program

He mentioned the importance of realizing how the projects relate to one another. He also put forth the short-term problem of the fate of Aldicarb use with respect to potato growers and the Suffolk County Department of Health.

The Agenda of the session was to be as follows:

1. A discussion of the overall context of the program. Emphasis was to be placed on developing a concerted effort on the part of all agencies involved to deal with short-term and long-term issues. In the immediate future, it is imperative that uncertainties and anxieties in the agricultural and general community be allayed. The long-term requires continuing assessment of the potential health hazard and possible changes in pesticide management.
2. The second half of the meeting was to deal specifically with the details of the Aldicarb modelling program. The technical aspects were to be discussed and time schedules arranged.

II. Dr. Malfouz Zaki of the Suffolk County Department of Health Services presented the department's position. He related that the department had been bombarded with letters and calls from homeowners very anxious about the safety of their drinking water. He was concerned about lack of notification regarding Aldicarb meetings in the past.

Ron Ney of the USEPA Hazard Evaluation Division stated that his division wished to restrict the discussion to the technicalities of modelling without reference to broader health and agricultural issues. Hence the lack of notification.

Keith Porter commented on the scope of the model and its partial dependence on health department data. He also brought up the fact that Aldicarb is a critical local and statewide problem, as well as an EPA responsibility and it was therefore desirable to discuss the broader context.

He further stated that Bob Williams of EPA Region II was willing to act as EPA's Representative in the broader context and it was recognized that the Hazard Evaluation Division would participate only as observers until modelling was reached on the agenda.

Dr. Zaki continued his explanation of the health department's position:

1. He stated that there are 5,000 private wells within the areas in which Aldicarb is used. There are a further 15,000 wells adjacent to the areas.
2. He stated that of 145 drinking water wells sampled, 35% contained Aldicarb and some contained Furodan and Dinoseb as well. Eighteen percent of these well sources exceeded the 7 ppb standard set by the New York State Department of Health.
3. He outlined some aspects of the health department's predicament, brought on by lack of coordination with the EPA:
  - a. The inability to tell homeowners whether their water is safe or not,
  - b. results of the well analyses had been received by telephone, not in writing. The health department would not act on such verbal information,
  - c. the lack of lab facilities available to perform the number of analyses necessary, and
  - d. the delay in results of lab tests being made as part of the epidemiological studies.

Discussion which followed provided some explanation for the lack of coordination with and within EPA. Some clarification of the EPA structure was made, and the need for cooperation was emphasized again.

III. After a roll call, J.B. Sieczka presented a review of the meeting of the Potato Advisory Committee on December 4. The overall opinion of potato growers at this meeting was that a ban on Aldicarb would be catastrophic to the industry on Long Island. However, growers were willing to consider reducing application rates and changing the timing of application to reduce the amount of leaching. Mr. Sieczka gave an explanation of these application rates. He also suggested possible future methods of beetle control. Bill Sanok of Cooperative Extension made the point that if Aldicarb were not totally banned, higher rates of other pesticides would be needed for control. These might also have a detrimental effect.

With the understanding that there is no viable substitute for Aldicarb on Long Island, ~~the representatives of the Department of Health recognized the economic adversity~~ that a ban would cause. However, they restated the need for more comprehensive toxicological studies. Chronic effects associated with low-dose exposure and the synergistic effect of Aldicarb combined with other substances must be investigated. As laboratory testing methods get more sophisticated, other toxins may be identified in well water and public pressure is mounting to determine associated health hazards.

With the realization that Aldicarb may not be the only toxic chemical present in the groundwater, the discussion took on a broader context.

1. On-site activated carbon filters were presented as a possible solution to the overall question of toxic organic substances. However, questions regarding the cost and reliability of these units were raised.
2. Hal Vandermeer and Judith Schreiber of the New York State Department of Health explained the method by which water quality standards are established. The difference between the present standard of 7 ppb and the Union Carbide recommended standard of 40 ppb was to be examined.
3. There was some concern about the relatively high standard for Aldicarb in the potato tuber (1,000 ppb). This standard was originally accepted on the grounds that Aldicarb breaks down to non-toxic by-products when potatoes are cooked.

At this point, Keith Porter recounted some of the considerations to be included in a draft short-term Aldicarb proposal to be considered by EPA.

1. Means must be found to continue the drinking water survey under the auspices of the Health Department.
2. Presentation of the farmers' views, including their willingness to reduce application rates.
3. Assurances of the benefits of reduced application rates. It should be stated that leaching losses could be curtailed by 50% or more with the new plan.

Dr. Malfouz Zaki and Dennis Moran recounted the most pressing issues concerning the Health Department:

1. The need for documentation of whether Aldicarb is toxic or non-toxic at certain levels.
2. The need to know how long continuing levels of Aldicarb are likely to be in the groundwater.
3. They further stated that reducing application rates may not be enough, and that the long-term aspect of the problem must be addressed.
4. They expressed concern about how the public would now react if the water quality standard were changed in a manner which might suggest the adjustment was to accommodate the levels of Aldicarb being found, rather than on the basis of what was sound toxicologically.

A discussion of the logistics involved in preparing a short-term policy started with the question of the steering committee. It was agreed that EPA should set up this committee. Bob Williams undertook to promote this view in EPA Region II. This initiative has general support including that of the representatives of the NYS Departments of Health, Agriculture and Markets, and of Environmental Conservation. It was also agreed that any recommendations to come out of this meeting should be channeled through EPA Region II. This was seen as the best way of having the present critical needs adequately addressed.

Keith Porter summarized the morning session with the following points:

1. There is a need for the potato growers' case to be presented.
  2. There is an urgent need for further sampling by the Health Department.
  3. The present water quality standard should be closely scrutinized.
  4. Activated carbon treatment of water at the tap should be explored.
  5. Means of funding for these activities should be explored.
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Minutes of the December 5 Afternoon Meeting on the  
Aldicarb Modelling Program

This meeting followed a morning session at which the overall direction of the Aldicarb Program was discussed. The afternoon session was to deal specifically with the collection of data for the Aldicarb model. The following is a synopsis of the final data collection plan.

I. The considerations involved in the data collection effort can be outlined as follows:

A. Micro Model

1. Selection of site
2. Sampling
  - water
  - soil
3. Shipping
4. Analysis
5. Interpretation

B. Macro Model

1. Selection of Regions
2. Data Requirements
3. Analysis
4. Uses and Interpretation

A. Micro Model

1. Selection of Site. The Wickham farm on the North Fork has already been chosen.
2. Sampling
  - a. Water Sampling - Water sampling will be carried out by the US Geological Survey. Samples will be taken from 10 well sites. Three samples will be taken at each site. Separate wells, each with a 1 foot screen, will collect samples at 1-2 feet, 5-6 feet, and 9-10 feet below the water table at each site.

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For sites which are down-gradient, the wells will be somewhat deeper to account for diffusion. Drilling will take place from December 10-21. The sampling will take place on January 7 and 8. Each sample will be two liters divided into separate 1 liter plastic bottles. It was decided that one sample should be spiked to act as a check on lab procedures or transportation effects. Hence, a total of 30 samples plus one extra per shipment of samples (31 if all the samples are

shipped together) will be taken. A great deal of discussion took place regarding how the spiking could be done. It was finally agreed that one extra sample per shipment will be sent to Beltsville to be spiked and then sent to Utah State for analysis with the rest of the samples. The lab at Texas Tech might analyze some of the samples if there are too many for Utah State.

- b. Soil Sampling - Soil samples will be taken at six basic points. Samples will be taken every six inches in each core, so that a core dug in an area with a water table depth of 10 feet would yield 20 samples. A total of 120 1/2 pint samples plus 5 samples to be spiked at Beltsville, will be sent to Utah State [assuming a 10 ft water table depth].

With a soil quarantine presently imposed on Long Island on account of the Golden Nematode, permission for mailing soil samples must be secured from the Department of Agriculture.

3. Shipping. As mentioned above, the water samples are to be shipped in 1-liter plastic bottles. The half-pint soil samples are to be shipped in plastic bags. All samples are to be frozen before shipment. All samples will be sent via United Parcel Service. Shipment of samples directly to Utah shouldn't take more than 2 days. Shipment of samples to be spiked in Beltsville before arrival at Utah shouldn't take more than 5 days. Since packing the samples in dry ice might crack the plastic containers, care must be taken for insulation. The tentative shipping date(s) is January 8-10.
4. Analysis. Analysis of the samples will take from one to two months. The option of using the Texas Tec lab for analysis must be considered if the volume of work so dictates. Two weeks will be required by Intera to produce a model after receiving the results. The water-balance aspect of the model will be worked on in the interim.
5. Interpretation. An attempt will be made to relate the concentrations of Aldicarb in the soil profile to the concentrations in the ground-water. This should indicate whether the concentrations can be expected to increase or decrease.

B. The Macro Model. The macro model depends to a large extent on the relation of well data compiled by the Department of Health to the results of the micro model. Great care will have to be taken in using this data:

1. The screening depths of the wells sampled aren't known.
2. Each well sample was analyzed by different labs and the results are often conflicting.

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Nonetheless, the data will be of some use in identifying "hot spots" and areas not threatened with contamination. Further sampling is needed to more adequately define these boundaries.