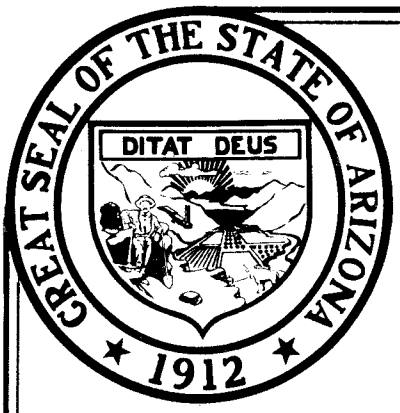

PERFORMANCE AUDIT

PESTICIDE REGULATION

COMMISSION OF AGRICULTURE AND HORTICULTURE

Report to the Arizona Legislature
By the Auditor General
November 1990
90-7

DOUGLAS R. NORTON, CPA
AUDITOR GENERAL

STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

LINDA J. BLESSING, CPA
DEPUTY AUDITOR GENERAL

November 30, 1990

Members of the Legislature
State of Arizona

The Honorable Rose Mofford
Governor of the State of Arizona

Mr. Kenny Evans, Director
Commission of Agriculture and Horticulture

Transmitted herewith is a report of the Auditor General, A Performance Audit of Pesticide Regulation: Commission of Agriculture and Horticulture. This report is the second in a series of five reports on Pesticide regulation and is in response to Chapter 162, Section 7, of the 1989 Session Laws.

The report addresses serious problems in the Commission of Agriculture and Horticulture's enforcement of pesticide laws -- some of the worst enforcement problems we have audited. In addition, our report also discusses the need for the State to develop new programs to address continuing concerns with pesticide drift and the disposal of pesticide containers.

My staff and I will be pleased to discuss or clarify items in the report.

Sincerely,

Douglas R. Norton
Auditor General

DRN:lmn

STAFF: William Thomson
Peter N. Francis
Arthur E. Heikkila
Dennis B. Murphy
Cindy A. Trimble
Shan D. Hays
George A. Anderson
Ned E. Parrish
Leonard B. Wojciechowicz

SUMMARY

The Office of the Auditor General has conducted a performance audit of the Arizona Commission of Agriculture and Horticulture's activities related to agricultural pesticides. This audit was conducted in response to Chapter 162, Section 7, of the 1989 Session Laws which directed us to review the State's pesticide regulatory program administered by four State agencies, including the (ACAH).

The Commission of Agriculture and Horticulture is comprised of six members and is responsible for administering ACAH pesticide laws. The Commission apoints a director who has responsibility for enforcing those laws. ACAH has broad responsibilities for pesticide regulation. To implement its statutory responsibilities, ACAH created the Agricultural Chemicals and Environmental Services (ACES) Division. Aside from ACES, four other units within ACAH are involved in regulation and monitoring of agricultural pesticide usage, including regulation of the selling, storing, transporting, handling and applying of pesticides, the disposal of pesticide containers and training licensees in the proper and safe use of pesticides. For pesticide regulation during fiscal year 1989-90, ACAH had expenditures of $676,651 and 18 Full-Time Equivalent (FTE) positions.

ACAH Is Reluctant To Conduct Thorough And Timely Investigations Of Pesticide Complaints (see pages 7 through 16)

ACAH does not routinely investigate incidents involving potential violations of the pesticide statutes. People filing complaints stated that ACAH staff either discouraged them from filing complaints or their complaints were ignored. In addition, Commission staff often log citizen's calls about pesticide usage as "concerns" rather than complaints; therefore, these citizen's calls are not investigated. Even when ACAH has been aware of potential violations, it has failed to pursue investigation of these cases because it has an "informal" policy of not investigating possible violations unless a complaint is received from a private citizen.

ACAH officials often fail to fully investigate cases even when evidence suggests violations may have occurred. In some cases, investigators simply stopped investigations if they could not find a report by an applicator that he had made an application in the area. In many investigations, ACAH personnel often do not interview witnesses or take pesticide samples.

Completed investigations are often delayed. On average, ACES required 126 days to investigate a complaint and submit a report to the Attorney General. Delays are often caused by the State Agricultural Laboratory or the ACES Division itself. The lab's delay in returning pesticide samples may be due to the low priority it assigns ACES' samples. Although, it is unclear why delays occur in ACES, the delays have had substantial impact on case enforcement.

ACAH Has Not Taken Adequate Disciplinary Actions In Pesticide Enforcement Cases **(see pages 17 through 26)**

Although ACAH is empowered to take enforcement action against those who violate the pesticide statutes, violators seldom receive strong penalties, even after repeated offenses. In some cases, ACAH has ignored complaint information and failed to take serious disciplinary action against violators, even when clearly warranted. Of the 414 cases investigated from August 1986 to December 1989, no citations for serious violations were issued. ACAH took action in only 151 cases, and nearly two-thirds of those actions involved De minimis violations or Letters of Warning or Notices of Concern.

Also, there is an appearance of impropriety in the resolution of disciplinary matters and the enforcement of applicable rules and statutes. The Director has used negotiated settlements to unilaterally reduce or dismiss violations, even though he lacks the statutory authority to do so. Until this year, no records of meetings have been

maintained, and there still is no public posting of meeting times; therefore, complainants or other interested parties are not being notified of upcoming meetings.

More Can Be Done To Address The Problem Of Pesticide Drift In Residential Areas **(see pages 27 through 32)**

An overwhelming number of complaints regarding pesticide drift and overspray involve aerial applications -- successful targeting of pesticides is more difficult with aerial application than with ground spraying. Because Arizona has implemented most of the available regulatory options to control drift, ACAH should sponsor studies to identify more target efficient application methods. In addition, the University of Arizona Cooperative Extension Service should also consider directing research efforts toward drift minimization and target efficiency.

Improper Disposal Of Pesticide Containers Has Been Widespread **(see pages 33 through 38)**

Improper disposal of pesticide containers can seriously affect human health and the environment. Inconvenience, lack of available facilities, and cost often lead to illegal pesticide disposal, and the public assumes the cost of cleaning up these sites. Arizona should consider the methods utilized by several other states to handle this problem.

Can Arizona Do More To Reduce The Use Of Agricultural Pesticides? **(see pages 39 through 47)**

Arizona could reduce expenditures for pest control while improving the environment by the increased use of Integrated Pest Management (IPM) techniques. Arizona and several other states have benefited from IPM programs. Although Arizona now uses IPM programs in some areas, resource constraints have hampered its implementation Statewide. IPM programs could be greatly expanded by generating revenue from a tax on the sale of pesticides.

A More Coordinated And Comprehensive Pesticide Reporting System Could Benefit The State (see pages 49 through 52)

Although Arizona's pesticide reporting requirements compare favorably with those of other states, requirements for sellers and users of pesticides vary greatly. Obtaining current use information and sales data is difficult. Proposed DEQ rules may further complicate the system. A single, shared data base could assist those required to report while providing valuable information to the State.

ACAH Needs To Revise Its Rules Establishing Enforcement Penalties (see pages 53 through 58)

ACAH's rule establishing enforcement penalties does not provide adequate punishment for the improper use of pesticides. For example, the rule does not provide punishment for conduct that may have the potential for substantial harm, but has not resulted in actual harm.

Commission rules also appear to define a serious violation too narrowly. Some violations may need reclassification. Some violations are classified as nonserious that should actually be classified as serious; some acts could be classified in either category.

TABLE OF CONTENTS

TABLE OF CONTENTS (Con't)

TABLE OF CONTENTS (Con't)

LIST OF TABLES

LIST OF TABLES (Con't)

INTRODUCTION AND BACKGROUND

The Office of the Auditor General has conducted a performance audit of the Arizona Commission of Agriculture and Horticulture's activities related to agricultural pesticides. This audit was conducted in response to Chapter 162, Section 7, of the 1989 Session Laws, which directed us to review the State's pesticide regulatory program administered by four State agencies, including the Arizona Commission of Agriculture and Horticulture (ACAH).

Major Duties

A.R.S. §3-101 establishes a Commission of Agriculture and Horticulture consisting of six members who are appointed by the Governor. The Commission appoints a director to oversee Commission programs and staff. A.R.S. §3-362 gives the Commission responsibility for administering pesticide laws. A.R.S. §3-368 requires that the director enforce those laws. The Environmental Quality Act (Chapter 368 of the 1986 Session Laws) transferred responsibility for regulating pesticides from the Pesticide Control Board to ACAH. Major statutory responsibilities, which increased with enactment of the EQA, include the regulation of the selling storing, transporting, handling, or applying of pesticides, the disposing of pesticide containers and training licensees in the proper and safe use of pesticides. Arizona Revised Statutes (A.R.S) §3-363 directed the Commission to adopt pesticide regulations. The Commission was able to adopt most of these regulations within one and one-half years. These regulations contain provisions which:

- prescribe measures to control, monitor, inspect, and govern pesticide use;
- prohibit or restrict the use of certain pesticides;
- restrict areas in which pesticides may be used;
- prescribe minimum qualifications for those engaged in pesticide use;
- prescribe recordkeeping and reporting requirements for pesticide use;

- prohibit pesticide use inconsistent with the Federal requirements on the product label;
- issue licenses, permits, and certificates for pesticide use;
- establish a nonexclusive list of acts and omissions that constitute different levels of violations; and
- establish a system of administrative penalties and fines for violations.

A.R.S. §3-362 further grants ACAH the authority to conduct investigations of alleged violations of the pesticide control statutes and take enforcement action against violators.

Organizational Structure

To implement its statutory responsibilities, ACAH has created an Agricultural Chemicals and Environmental Services (ACES) Division. The Division is comprised of 10.5 Full-Time Equivalent (FTE) staff and spends over $260,000 annually in General Fund monies. In addition, the Division receives approximately $90,000 annually in grant monies from the Environmental Protection Agency (EPA) to support the Agency's cooperative certification and enforcement agreements.

The ACES Division is also responsible for the examination and licensure of agricultural aircraft pilots, custom applicators, and pest control advisors, and for the certification of private and commercial applicators. In addition, the Division issues grower and seller permits as well as licenses for each piece of equipment used in the application of pesticides. As illustrated in Table 1 (see page 3), the Division issues more than 4,000 licenses, certificates, and permits annually.

TABLE 1

ARIZONA COMMISSION OF AGRICULTURE AND HORTICULTURE
AGRICULTURAL CHEMICALS AND ENVIRONMENTAL SERVICES DIVISION
LICENSES, CERTIFICATIONS, AND PERMITS ISSUED
FISCAL YEARS 1986-87 THROUGH 1988-89

	1986-87	1987-88	1988-89
Grower Permits	1,939	1,832	1,863
Seller Permits	131	123	104
Agricultural Pilots Licenses	175	183	196
Custom Applicators Licenses	91	95	85
Equipment Licenses	249	279	266
Pest Control Advisor Licenses	445	405	372
Applicator Certificates			
Private	1,009	863	1,215
Commercial	564	542	488
TOTALS	4,603	4,322	4,589

Source: Arizona Commission of Agriculture and Horticulture Budget Request, Fiscal Year 1990-91, Schedule 4, Service Measurements

Other Units

Aside from the ACES Division, several other units within ACAH are involved in the regulation and monitoring of agricultural pesticide usage.

- **ACAH District Inspectors** often provide assistance to the ACES Division in investigating pesticide violations.
- **The Office of the State Chemist** registers EPA-approved pesticides for use in Arizona, evaluates petitions for special local needs and the emergency and experimental use of pesticides, and monitors formulations of the pesticides offered for sale in Arizona.
- **The State Agricultural Laboratory** conducts sample analysis for enforcement purposes and also conducts analyses of pesticide formulations for the State Chemist.
- **The Integrated Pest Management Unit** promotes the coordination of crop management and cultural practices, field scouting, economic thresholds, and chemical and biological controls in an effort to reduce the use of chemical pesticides.

Table 2 (see page 4) presents the pesticide-related staffing and expenditures under the direction of the Commission.

TABLE 2

ARIZONA COMMISSION OF AGRICULTURE AND HORTICULTURE
PESTICIDE REGULATION
STATEMENT OF EXPENDITURES AND
FULL-TIME EQUIVALENTS (FTEs)
FISCAL YEARS 1987-88 THROUGH 1989-90
(unaudited)

	1987-88	1988-89	1989-90
ACES DIVISION			
General Fund Expenditures	$ 261,032	$ 291,203	$ 260,406
EPA Contract Expenditures	90,989	81,548	90,238
OTHER ACAH DIVISIONS			
General Fund Expenditures	104,422	114,520	104,650
INTEGRATED PEST MANAGEMENT			
General Fund Expenditures	185,252	147,864	91,684
Federal Funds Expenditures	19,953	87,365	108,400
OTHER PROGRAM EXPENDITURES			
Applicator Training	7,500	6,000	7,000
Grasshopper Control	0	0	14,273
Marketplace Inspection	1,000	2,000	0
Agency Subtotal	670,148	730,500	676,651
BOLL WEEVIL ERADICATION PROGRAM(a)	3,211,987	4,668,784	4,067,315
TOTAL EXPENDITURES	$3,882,135	$5,399,284	$4,743,966
FTE POSITIONS			
ACES Division	10.5	10.5	10.5
Other ACAH Divisions	4.2	4.5	4.0
Integrated Pest Management	3.5	3.5	3.5
TOTAL FTE	18.2	18.5	18.0

(a) Funded by growers through a per bale surcharge on cotton and monies provided by the United States Department of Agriculture. The program employs approximately 35 full-time staff and 85 part-time staff working nine to ten months per year to carry out its responsibilities.

Source: Arizona Commission of Agriculture and Horticulture Director's Office

Scope Of Audit

Our audit contains Findings in the following seven areas:

- ACAH's reluctance to conduct thorough and timely investigations of pesticide complaints;
- ACAH's failure to take adequate disciplinary actions in pesticide enforcement cases;
- ACAH's need to further address the problem of pesticide drift off target during application;
- the need for new programs to ensure the proper disposal of pesticide containers;
- whether Arizona should place more emphasis on the development of pest control methods that do not rely as heavily on synthetic pesticides;
- whether a more coordinated and comprehensive pesticide reporting system could benefit the State; and
- the need to revise ACAH's rules to ensure more effective enforcement of the pesticide statutes;

This audit was conducted in accordance with generally accepted government auditing standards.

The Auditor General and staff express appreciation to Commission members and the Director and staff of the Arizona Commission of Agriculture and Horticulture for their cooperation and assistance during the audit.

FINDING I

ACAH IS RELUCTANT TO CONDUCT THOROUGH AND TIMELY INVESTIGATIONS OF PESTICIDE COMPLAINTS

> On August 1, 1988, a woman telephoned the ACES Division of ACAH to report an incident in which approximately 20 people were sprayed during an aerial pesticide application to a field adjacent to their place of employment. The suspected applicator has a long history of similar violations. However, according to the complainant, the ACES official she spoke with tried to soothe her concerns about the incident and its effects. The woman said she got the impression from her conversation with the ACES official that nothing was going to be done about her complaint. Therefore, she made several additional calls to ACAH in the following weeks in the hope of persuading the Division to conduct an investigation. Nevertheless, ACES officials did not pursue the matter.

The manner in which ACAH handled this case is not an isolated incident. We found that the Commission is reluctant to conduct thorough and timely investigations of pesticide complaints. For example, many complaints involving potential violations of the pesticide statutes are not routinely investigated. In many instances, when investigations are conducted, the manner in which they are conducted appears to be designed to overlook violations. Finally, during the investigative process, substantial delays occur that have considerable impact on the outcome of the enforcement of these cases.

Possible Violations Are Not Investigated

Commission staff do not routinely investigate incidents involving potential violations of the pesticide statutes. Citizen reports of the possible misuse of pesticides are sometimes ignored, and potential violations of the pesticide statutes have not been investigated.

Citizen reports not investigated - Many complaints are ignored. We identified numerous instances in which citizens contacted ACAH with information concerning possible violations of the pesticide statutes.

However, these reports were not investigated as complaints by ACES. The following are two examples of such incidents.

- In 1989, five people reportedly experienced respiratory problems from an aerial application of pesticides to a field across the street from their home. The homeowner reported the incident to an ACES inspector, and ACES' records indicate a complaint number was assigned to the case. However, ACES' records also indicate that the ACES Division Director contacted the complainant and, based on his conversation with her, directed the inspector not to investigate the incident. Consequently, the complaint number was deleted and no investigation was conducted. However, when we spoke with the complainant, she told us that she merely reiterated her complaint to the Division Director and felt she provided no new information that would warrant canceling an investigation.

- In 1988, school officials contacted ACES about an application that had been made to a field adjacent to the school during classes. School officials informed ACES personnel that they had not received prior notification of the application as required by law. Although the applicator in this case had a history of violations, it appears ACES made no attempt to investigate the incident and substantiate a violation.

These incidents, documenting the Division's failure to adequately investigate citizen complaints, do not appear to be isolated. We spoke with seven people who had filed complaints with ACAH and contended that either ACES personnel attempted to discourage them from filing complaints, or their complaints were simply ignored.

ACES officials admit that many calls from the public involving pesticide usage are not pursued as complaints. According to the ACES inspection supervisor, citizens often contact the Division with questions about pesticide usage, or to register their "concerns" about the use of pesticides in general. According to the supervisor, distinguishing between citizen reports that are complaints and those that are merely "concerns," is often a "judgment call" on the part of the ACES staff taking the calls. While there are a number of "concerns" filed, our review of the ACES' log used to record citizen "concerns," clearly indicates that many of these "concerns" are actually very specific, and are indeed complaints the Division has failed to investigate. During the

period of our review, the concerns log lists 230 entries -- over 55 percent of the 414 complaints logged by the Division during approximately the same time period.[1]

Known violations not pursued - Although ACAH clearly has the statutory authority to initiate investigations without third-party complaints, we found that ACES has not pursued instances involving potential violations of the pesticide statutes of which Division officials were aware.[2] Division policies regarding the need for third-party complaints has contributed to the failure to investigate these cases.

We identified the following reports of incidents with potential violations ACES officials knew about, but did not pursue.

- In 1989, an employee who mixed and loaded pesticides for an aerial applicator suffered a significant pesticide poisoning that required approximately five days hospitalization. According to the employee, he spoke directly with the ACES Division Director and reported that the applicator had not provided adequate safety equipment or the required protective clothing. He also reported he had not received any formal training on the safe handling of pesticides, and asked ACES to conduct an investigation of the incident. Although ACES had the authority to investigate the case, no formal action was taken by the Division. In fact, a comment attached to the one page of handwritten notes of the incident made by the Division Director, indicates that the Director instructed ACES staff not to pursue an investigation unless this man called again. Furthermore, ACES officials did not refer the case to the Industrial Commission of Arizona for their investigation of a possible violation of the pesticide worker safety rules.

- In 1987, while monitoring an aerial application, an ACAH district inspector documented significant drift or an overspray of moderately toxic pesticides. After applying the pesticides to the target crop, the applicator deposited pesticides off the target, across a busy road and onto an area of occupied housing. In an effort to pursue an investigation, an ACES inspector presented the evidence of this incident to the ACES Division Director. According to a sworn statement provided to us by the inspector, the Division Director

---

(1) We reviewed all pesticide complaints received by ACES from August 13, 1986 through December 31, 1989, although the concerns log covered only the period from December 9, 1986 through December 31, 1989. Additionally, the ACES inspection supervisor stated that not all concerns received by the Division have been recorded in the log.

(2) A.R.S.§3-362.A.1, empowers the Commission to "...conduct investigations, on complaint and on its own initiative, regarding violations of this article and compile information necessary to administer this article." (emphasis added)

refused to authorize an investigation of the incident, and stated: "I'm not going to make it impossible for these guys to fly." The Division Director then requested that the ACES inspector rewrite the monitoring form to indicate that no significant drift had occurred, and then instructed the inspector to destroy the evidence that documented the violation.

- In 1988, an ACES inspector witnessed an unlicensed pilot applying pesticides near Yuma. The inspector had administered the licensing test to the pilot two days earlier, and the results had not yet been received. In addition, the $50 licensing fee had not been paid. In lieu of filing charges, the inspector agreed to allow the pilot to travel to the ACES office in Phoenix and pay the $50 fee. However, later the same day the inspector again saw the pilot applying pesticides. The inspector later learned that the owner of the aerial application business that employed the pilot had spoken with the ACES Division Director who agreed to "loan" the $50 to the applicator so that the pilot could continue making applications that day.

- In 1989, as a result of equipment failure, an aerial applicator released in bulk, an undetermined amount of pesticides. Although the bulk release of pesticides due to equipment malfunction is not a violation, ACAH pesticide enforcement rules require the reporting of such releases within three hours of the incident. The operator of a business near the incident reported the release to ACES officials two days after the incident, and added that there were yellow dots about the size of nickels on his sidewalk. An ACES inspector contacted the applicator who admitted to the bulk release. Although the applicator had not notified ACES of the incident within the required three hours, no charges were filed.

While the reasons for ACES' failure to pursue instances of potential violations is not completely clear, the Division's policy of requiring third-party complaints has adversely impacted the investigation of these cases. According to the ACES inspection supervisor, ACES has an "informal," unwritten policy of not investigating a pesticide misuse violation unless a complaint is received from a private citizen. This policy is adhered to even when an ACES official is aware of a possible violation, as suggested by the preceeding examples. Such a policy significantly reduces the effectiveness of ACAH's pesticide enforcement, and strongly suggests a reluctance to regulate the industry.

Investigations Appear Designed To Ignore Violations

Even when ACES does pursue a complaint, the manner in which investigations are conducted often appears designed to avoid identifying violations. Cases are closed without the thorough investigations

necessary to document violations. In addition, investigations are not pursued unless the applicators file a report that they made an application in that area. Finally, appropriate investigative techniques are not always followed.

Cases closed without thorough investigations - ACES often closes cases without thoroughly investigating complaints. We identified several instances in which evidence existed that suggested violations. However, ACES officials did not pursue these cases as evidenced by the following examples.

- In 1988, a ranch foreman reported an aerial application near his employer's property that resulted in pesticide drift as well as health problems. Laboratory analysis of samples taken from the property identified the presence of the same restricted-use pesticide that had been applied by an aerial application in the area at the time of the incident, as well as two other types of pesticides. ACES officials were unable to identify any other applications in the area that would account for the two additional pesticides. Based on this information, ACES officials questioned the validity of the laboratory analysis and concluded that no pesticide misuse violation could be documented. However, the Assistant Attorney General assigned to review the case recommended that ACES staff reconsider their decision, based on the evidence presented, and issue a citation to the applicator for allowing these pesticides to drift. Additionally, the Assistant Attorney General noted that ACES officials had not investigated the charges made by a witness that the application had been made within the quarter-mile buffer zone surrounding a nearby school. Although the attorney's comments appeared pertinent, no citation was issued.

- In 1987, a woman reported her son was sprayed by an aerial applicator while walking along a road, and estimated the incident occurred between 6:45 a.m. and 7:00 a.m. ACES officials identified an applicator who had made an application in the area on the morning in question, but the applicator reported the application took place from 6:00 a.m. to 6:45 a.m. However, no statement was taken from the woman or her son, nor were any lab samples taken. Based on the applicator's report of the incident, ACES officials concluded that no application could be documented for the time reported by the complainant and closed the case with no further investigation.

Investigations not pursued without documentation of application - ACES will not pursue a drift or overspray complaint unless an applicator has filed a pesticide-use report, commonly referred to as a Form 1080. Applicators are required to submit a Form 1080 (which includes such information as the pesticide applied, the date and time of the

application, and the wind direction and velocity) by the Monday following the application. However, as shown in the following cases, it appears that Form 1080s are not always filed, and the refusal to investigate complaints if the Form 1080s are missing, appears to be a convenient method of stifling investigations.

- In 1989, a man reported he was sprayed by an aerial applicator in the early morning hours while riding his motorcycle home from work. An ACES inspector obtained a statement from the man, as well as a sample for laboratory analysis of the residue found on the man's motorcycle. However, when a Form 1080 corresponding to the time and location reported by the complainant could not be found, ACAH closed the case. In reviewing this case, the Commission's Assistant Attorney General commented: "This appears to be a classic case that if no 1080 is filed, ACES investigators presume there was no application." The Assistant Attorney General also noted that ACAH had not obtained a description of the aircraft from the complainant, or the results of the laboratory analysis of the sample.

- In 1987, a woman reported her home was sprayed with pesticides by an aerial applicator. ACES officials reviewed the Form 1080s for applications in the area, but could not find an application for the time reported by the complainant. Based on this information, ACES closed the investigation without obtaining samples from her home for laboratory analysis to document the presence of pesticides.

<u>Appropriate investigative techniques not followed</u> - Even when a complaint is investigated, ACES does not always follow some of the most basic investigative techniques. Our review of the 414 complaint investigations conducted by ACES since August 1986 reveals the following information.

- In 45 percent of the investigations in which no witness statements were obtained, witnesses were available and should have been interviewed.

- Rather than taking a statement directly from complainants, applicators, or witnesses, ACES inspectors routinely leave, or even mail, a statement form for them to complete, resulting in many investigations without statements from these parties.

- In 40 percent of the investigations in which no samples were obtained, samples to document pesticide misuse should have been taken.

These practices are contrary to the investigative standards established by the EPA and adopted by ACES as their operating procedures. According to the EPA standards, inspectors should interview, at a minimum, the

complainant and the applicator. In addition, any witnesses that can attest to the relevant circumstances of the incident should be interviewed. Further, statements from these people should be taken directly by the inspector in order to establish all of the relevant facts, and to ensure that all information is factual and firsthand. Finally, the EPA standards indicate that, in order to document any violations, it is essential to collect residue samples in all incidences of suspected pesticide misuse.

Substantial Delays In Investigative Process

Substantial delays have occurred during ACAH's investigation of pesticide complaint cases. Due to statutorily mandated time frames, these delays have considerable impact on enforcement.

Substantial delays in ACAH pesticide investigations - ACAH has delayed its investigation of pesticide complaint cases. Our analysis of the 414 cases investigated by ACES between August 1986 and December 1989, found that ACES required an average of 126 days (approximately four months) to investigate a complaint and submit it to the Attorney General for review. For cases resulting in the issuance of a citation, the Commission took an average of 175 days. Furthermore, 26 of the 151 cases (17 percent) in which a citation was issued, went beyond the six-month (180-day) statutory limit.

Our review indicated two significant portions of the investigative process contributed to the Commission's overall delay in conducting investigations. First, the State Agricultural Laboratory took, on average, approximately 100 days to analyze residue samples and report the results to ACES. In fact, as illustrated in Table 3 (see page 14), in one-half of all the cases involving residue sample analysis, the laboratory took more than 90 days (or three months) to provide the results. The laboratory manager contends that these delays are due to a high turnover of staff and difficulty in recruiting staff due to the low salaries offered by the laboratory for residue chemists. However, according to one laboratory official, these delays may also be attributed

to the low priority assigned to the analysis of ACES samples, as compared to the sample analysis performed by the laboratory for other organizations.[1]

TABLE 3

TIMELINESS OF PESTICIDE RESIDUE SAMPLE ANALYSIS AUGUST 1986 THROUGH DECEMBER 1989

Number of Days From Date Sent to Lab	Number of Cases	Number of Cases With Violations
0- 45	48	28
46- 90	33	24
91-135	24	13
136-180	32	24
181-225	14	10
226-270	5	1
271-365	3	2
TOTAL	159	102

Source: Office of the Auditor General staff analysis of all complaints received and investigated by ACAH during the period of August 13, 1986 to December 31, 1989.

The second portion of the investigative process that contributed to delays involved the amount of time each case remained within the ACES Division. Our review indicates that investigations were generally initiated within one day of receipt of the complaint. However, from this point until a summary of the investigation was completed often required an excessive amount of time. For example, for all cases reviewed, it took the Division an average of 118 days from the onset of the investigation, until a summary was completed and ready for review. Even in those cases in which no residue samples were sent to the laboratory for analysis, the Division required an average of 87 days to complete the investigation and provide a summary. Finally, it took the Division an average of 53 days after receiving laboratory results, to complete a summary.

---

(1) The State Agricultural Laboratory conducts pesticide residue sample analysis for the Structural Pest Control Commission, the Office of the Dairy Commissioner, and the Southwest Boll Weevil Eradication Program, as well as for the ACES Division.

The reasons for case delays due to ACES' inaction are unclear. The Division has a tracking system that provides a weekly update on the status of all open cases, including those awaiting laboratory results. This system has been operational since the Division assumed the responsibility for pesticide enforcement in August 1986. However, the Division's tracking system appears to have had little effect on ensuring the timely resolution of complaint investigations.

Delays have impact on enforcement - Due to statutorily mandated time frames, delays in the investigative process can have significant impact on the resolution of cases involving pesticide violations. A.R.S. §3-368.F, stipulates: "No citation may be issued after the expiration of six months from the date of the inspection or investigation which produced evidence of the violation." ACAH has interpreted this statute to mean that a citation must be issued within six months (180 days) of the date the investigation began, rather than concluded. This interpretation places a limitation of six months on all ACES investigations, regardless of the severity or complexity of a case.

However, Auditor General counsel believes that the statute, when read with other paragraphs in the section, should be interpreted to mean that a citation must be issued within six months from the date the investigation ends. Nevertheless, as illustrated by the following case, the delays in ACES investigations have had significant impact on the enforcement of these cases.

- On October 13, 1989, ACES responded to a complaint about an aerial applicator depositing pesticides onto a trailer park. Residue samples were taken from the trailer park the same day and sent to the State Agricultural Laboratory for analysis. On April 6, 1990, 175 days after the start of the investigation and less than seven days before the six-month statutory deadline, ACES received the sample results from the laboratory indicating the presence of the pesticide applied by the applicator. On April 13, 1990, a summary of the case was completed for the ACES Division Director's review. Eleven days later, on April 24, 1990, and 193 days from the start of the investigation, the Division Director submitted his recommendation for enforcement action to the ACAH Director. However, the Assistant Attorney General assigned to review the case advised ACES not to issue a citation, indicating that, in her opinion, delays at the State Agricultural Laboratory were not a sufficient reason to exceed the statutory limit.

- On October 16, 1987, a homeowner complained to ACES of damage to citrus trees and other plants she believed was caused by a recent aerial application of pesticides. Samples from the trees were taken on October 19, 1987, and submitted to the State Agricultural Laboratory for analysis. On November 6, 1987, 21 days after the start of the investigation, ACES received the laboratory results indicating the presence of the pesticides that had been applied by an aerial applicator to a nearby field. On May 24, 1988, 200 days after the start of the investigation, a summary of the case was completed for the ACES Division Director's review. Three days later, on May 27, 1988, the Division Director recommended to the ACAH Director that because the investigation had exceeded six months, the applicator should not be issued a citation. The ACAH Director agreed, and no citation was issued.

RECOMMENDATIONS

ACAH needs to develop and maintain a commitment to effective enforcement that includes the following:

- recording, investigating, and documenting all complaints;
- investigating all violations of the pesticide statutes, including those identified by Agency officials, not just those made by third parties;
- pursuing investigations even when the Form 1080s can not be found;
- following EPA criteria on interviewing complainants and witnesses, taking statements, and collecting samples when conducting investigations;
- reducing delays and completing investigations within the six-month statutory limit; and
- addressing problems with the State Agricultural Laboratory in obtaining sample analysis results within a reasonable amount of time.

FINDING II

ACAH HAS NOT TAKEN ADEQUATE DISCIPLINARY ACTIONS IN PESTICIDE ENFORCEMENT CASES

Even when complaints are fully investigated, ACAH displays a consistent pattern of weak disciplinary actions in its regulation of agricultural pesticide users. In fact, many of ACAH's administrative actions and procedures appear to be used to intentionally undermine effective enforcement.

Disciplinary Actions Available To ACAH

Arizona Revised Statutes (A.R.S.) §3-362.A, empowers the Commission with broad authority to investigate violations of the pesticide statutes and take enforcement action against violators. A.R.S. §3-368 also delegates specific enforcement responsibilities to the Director of ACAH that include the authority to determine whether the evidence gathered supports the allegations of a violation, as well as the level of the violation. The statutes specifically define three levels of violation:

- **De minimis** - a violation that has no direct or immediate relationship to safety, health, or property damage. There is no penalty for a de minimis violation.
- **Nonserious** - a violation that may have had a direct or immediate effect on safety, health, or property damage. A nonserious violation can carry a penalty of up to $500.
- **Serious** - a violation that produces a substantial probability that death or serious physical harm could result. A serious violation can carry a penalty of up to $10,000.

Finally, when the Director of ACAH determines a violation has occurred, he is authorized by statute to establish penalties for the violation and negotiate a settlement with the violator. Although ACAH and the Director have broad powers to enforce the pesticide statutes, we found that they frequently impose the most lenient enforcement action.

ACAH Displays A Consistent Pattern Of Weak Disciplinary Actions

In its regulation of agricultural pesticide users, ACAH consistently displays a pattern of weak disciplinary actions. Incidences involving potentially serious violations have not been appropriately acted upon. In addition, ACAH has not taken disciplinary actions against licensees with multiple violations. Finally, our review of complaint cases suggests a general lack of enforcement.

Serious violations have not been acted upon - ACAH has not acted appropriately in incidences involving potentially serious pesticide violations. The following examples illustrate ACAH's failure to act in cases involving flagrant violations of the pesticide statutes.

- **Example 1** - On April 13, 1987, two brothers (ages 8 and 11), the children of migrant workers, ventured into a dump containing old farming equipment and used pesticide containers. The youngest of the two brothers found an open bag of a highly toxic pesticide and began to play in it. Soon after, the young boy became ill and eventually comatose. He was transported to a local children's hospital and was listed in critical condition for several hours.

  A number of weeks later, the incident was reported to several State authorities, including ACAH. At the conclusion of their investigation, ACAH officials determined that the permitted grower on whose land the dump was located and whose illegally disposed of pesticide containers were found, had committed a nonserious violation of the pesticide statutes by failing to properly store and dispose of pesticide containers. ACAH fined the grower $150. No other civil or criminal actions were pursued by ACAH.

  Comments - Although the child clearly suffered severe physical harm from exposure to illegally disposed pesticides, an obvious basis for a serious violation, ACAH officials ignored this information. Instead, the ACAH Director issued the grower the lesser violation of nonserious and negotiated a minimal penalty. When we asked about this case, ACAH officials attempted to justify their inaction by claiming that the child was exposed to pesticides that his father stole from the grower. However, this allegation is completely undocumented in the ACES investigation file, and was not substantiated by the Attorney General's investigation.

- **Example 2** - In July 1987, while a farm employee was filling a sprayer tank with water, the well pump stopped allowing a herbicide in the tank to drain back into the well and contaminate it. The herbicide was Dinoseb, a product which had been suspended from use by the EPA in 1986 after it was linked to birth defects and sterility. The farm grower had instructed the employee to apply the Dinoseb despite the

fact that the grower had signed a statement in February 1987 acknowledging its suspension and indicating he had none on hand.

A family of ten living on the farm used the same well for drinking water. While washing in the kitchen sink, a family member was exposed to the Dinoseb and suffered burning eyes and respiratory problems. The following day the Attorney General's Office and the Department of Environmental Quality began an investigation and notified ACAH of the incident.

ACAH conducted a cursory investigation and issued a Notice of De minimis Violation. No fines were assessed nor was any action taken against the grower's permit to purchase and use pesticides.

The Attorney General's Office considered this case so serious that it pursued criminal prosecution of both the grower and the farm owners. In February 1989, the grower, who had given the instructions to use the Dinoseb, plead guilty to reckless disposal of hazardous waste, a Class I misdemeanor, and was sentenced to three years probation and 21 days in the county jail.

In addition to these cases, there appears to have been other instances of potentially serious pesticide violations that were not properly handled by ACAH. Without investigatory work by other agencies, we must rely on information gathered by ACAH in their investigation of the case. Nevertheless, we identified several cases in which there appears to have been the potential for serious violations which were not adequately pursued by ACAH. A few of these cases are described in detail as follows.

- In 1989, two people reportedly suffered health problems as a result of an aerial application over their home. The ACAH Director, citing lack of sufficient evidence, dismissed the charges against the applicator in a negotiated settlement meeting despite the fact ACAH enforcement staff documented that several people witnessed the incident and a physician confirmed pesticide exposure.

- In 1988, an aerial applicator sprayed a highly toxic pesticide on three people while they were working in their yard. They stated that the plane made several passes, applying pesticides directly over them. Although these people reported health problems for several days -- statutory grounds for a serious violation, ACES inspectors did not pursue this information. Based on their investigation, ACES Division staff recommended charging the applicator with a nonserious violation. However, after an undocumented meeting between the ACAH Director and the applicator, the Director reduced the charge to a de minimis violation. No fine was assessed.

- In 1987, an aerial applicator applied two highly toxic pesticides to a lettuce field in which a farmworker was operating a tractor. The farmworker reported that the application was made without warning him and that he had to run from the field in an effort to avoid being

sprayed. Additionally, the farmworker and a nearby resident reported that after the farmworker left the tractor, the applicator began a second pass over the field, cutting the worker off in his attempt to reach the edge of the field. Based on their investigation, ACES Division staff recommended charging the applicator with a serious violation. However, in a meeting between the ACAH Director, the applicator and his attorney, it was determined that based on the analysis of the farmworker's clothing, insufficient contamination had taken place to merit a serious violation. The ACAH Director reduced the charge to a nonserious violation and fined the applicator $250.

No action against licensees with multiple violations - Although ACAH has sufficient authority to do so[1], the Commission has not taken disciplinary actions against licensees with multiple violations. This has occurred even though several individual applicators and applicator businesses have accumulated several complaints involving violations. As illustrated in Table 4 (see page 21), during a 40-month period, eleven of the approximately 190 licensed aerial applicator pilots accounted for 62 (or 41 percent) of all 151 cases involving a violation. In addition, during the same 40-month period, five of the approximate 47 percent commercial aerial applicator businesses and the pilots flying for them accounted for 61 (40 percent) of all 151 violative acts. See Table 5 (page 22).

---

(1) A.R.S. §3-370.A and B, empower ACAH to take action against persons who commit nonserious and serious violations, respectively, to include: "...probation or suspension, revocation, nonrenewal or denial of a permit, license, or certification."

TABLE 4

REPEAT VIOLATIONS BY SELECT AERIAL APPLICATOR PILOTS AUGUST 1986 THROUGH DECEMBER 1989

Pilot	Number of Complaints(a)	Number of Violative Acts(b)
A	15	11
B	18	10
C	9	7
D	6	5
E	5	5
F	7	5
G	6	4
H	4	4
I	4	4
J	5	4
K	3	3
TOTALS	82	62

(a) This represents the number of incidents in which a complaint was filed and the applicator was identified as the possible violator.

(b) This represents the number of complaint cases in which the applicator was found to have committed a violation of the pesticide statutes.

Source: Office of the Auditor General staff analysis of all complaints received and investigated by Arizona Commission of Agriculture and Horticulture during the period of August 13, 1986 to December 31, 1989.

TABLE 5

REPEAT VIOLATIONS BY SELECT COMMERCIAL AERIAL APPLICATOR BUSINESSES AUGUST 1986 THROUGH DECEMBER 1989

Business	Number of Complaints(a)	Number of Violative Acts(b)
A	25	15
B	18	15
C	19	14
D	18	10
E	8	7
TOTALS	88	61

(a) This represents the number of incidents in which a complaint was filed and the applicator business or their pilots were identified as the possible violator.

(b) This represents the number of complaint cases in which the applicator business or their pilots were found to have committed a violation of the pesticide statutes.

Source: Office of the Auditor General staff analysis of all complaints received and investigated by Arizona Commission of Agriculture and Horticulture during the period of August 13, 1986 to December 31, 1989.

While the number of violations accumulated by these repeat offenders would appear to merit some action against their ability to use and apply pesticides in Arizona, during the 40-month period of our review, only one licensee had an action taken against his license.[1] In addition, the frequency and type of violative acts committed by these licensees further indicates the need for licensing action. The following descriptions of incidents listed in Table 4 (see page 21) illustrate this point.

---

(1) The licensee was required to serve probationary periods as a part of the penalties assessed against him in two cases. However, in both instances, the probations were assessed by a hearing officer and represent two of only three cases that ever went to an administrative hearing.

- **Pilot A** had eleven violations during the 40- month period of our review. However, eight of the eleven cases involved incidences within a seven-month period between April and October 1989, with the last two occurring on the same day. The pilot received penalties ranging from a fine of $300 and a 90-day probation to a de minimis violation.

- **Pilot B** had ten violations during the 40-month period of our review. Three of the ten occurred on the same day in September 1988. Four involved pesticide spray deposited on people, two involved pesticide applications near schools, and two involved pesticide sprayed on private property. Although the pilot averaged one violation every four months, the largest penalty he received was a $200 fine.

- **Pilot K** committed three violations during the 40-month period of our review. All three occurred in a period of less than 30 days. Two involved three separate bulk releases of pesticides which were not reported to the Commission as required by administrative rule. The third incident involved a direct overspray of pesticides to a golf course. The pilot received penalties ranging from a $250 fine for the golf course overspray to a de minimis violation for the third unreported bulk release.

General lack of enforcement - Our review of the 414 cases received and investigated by ACAH between August 1986 and December 1989, suggests a general lack of enforcement action. As shown in Table 6, of the 414 cases investigated, ACAH took enforcement action in only 151 cases. Furthermore, in these 151 cases, ACAH did not issue a single citation for a serious violation.

TABLE 6

ARIZONA COMMISSION OF AGRICULTURE AND HORTICULTURE
ENFORCEMENT ACTIONS
AUGUST 1986 THROUGH DECEMBER 1989

Serious	Nonserious	De minimis	Letter of Warning/ Notice of Concern	Total
0	52	64	35	151

Source: Office of the Auditor General staff analysis of all complaints received and investigated by Arizona Commission of Agriculture and Horticulture during the period of August 13, 1986 to December 31, 1989.

Administrative Actions And Procedures Undermine Effective Enforcement

Several administrative actions and procedures utilized by ACAH to enforce the pesticide statutes appear to undermine effective enforcement. Charges have been inappropriately downgraded or dismissed by the Commission Director following closed-door meetings with violators. ACAH has also issued numerous Letters of Warning and Notices of Concern rather than issuing actual citations for violations.

Violations downgraded following closed-door meetings - The ACAH Director has used the negotiated settlement process to unilaterally reduce and, in some instances, dismiss violations, even though he does not have authority to do so. These activities coupled with closed-door meetings with violators, create the appearance of impropriety in the resolution of disciplinary matters and the enforcement of the applicable statutes and rules.

In an apparent attempt to expedite the enforcement process, A.R.S. §3-368 empowers the Director to offer those cited with serious and nonserious violations an opportunity to negotiate a settlement in lieu of an administrative hearing. During our review of the 414 enforcement cases investigated by ACAH between August 1986 and December 1989, one serious and 42 nonserious citations were issued. Of these, only three went to administrative hearings and were not settled through negotiation with the Director. However, of the 40 cases negotiated by the Director, we identified eleven in which the violation was reduced, and three in which the violation was dismissed completely, a total of 14 cases, or one-third of the cases settled through negotiation with the Director.

Although the Director has unilaterally reduced and dismissed violations during negotiated settlements, he does not have the authority to do so. Earlier this year, after the Director dismissed violations in three cases, representatives of the Attorney General's Office challenged his authority to take such action. They argued that the Director was making decisions based on new evidence presented at the time of the settlement meeting, or by reevaluating existing evidence and assuming the role of a

hearing officer, thus exceeding his statutory authority. Based on the concerns of the Attorney General, the Director requested a formal Attorney General opinion on the authority granted to him in negotiated settlements. According to the Attorney General opinion, the Director can not act unilaterally to dismiss or otherwise change the final disposition of a complaint during negotiated settlement. Rather, the Director must provide the Attorney General an opportunity to analyze any additional information used by the Director to change the final disposition of the case, before the complaint may be dismissed or otherwise resolved.

An appearance of possible impropriety when conducting negotiated settlements is furthered by the manner in which the settlement meetings have been held.(1) According to the Commission Director, attendance at these meetings is generally limited to him, the ACES Division Director, the ACAH inspections supervisor, and the violator and his legal counsel, if any. Notices of these meetings are not publicly posted, nor is the complainant or any other involved party notified. In addition, before the first of this year, no record was kept of the meetings or the criteria used to determine the penalties assessed. Complainants and other interested parties had no means of reviewing a public record of the cases or evaluating the reasons actions were or were not taken. These facts are particularly significant when considering the number of instances in which the Director unilaterally reduced or dismissed violations.

---

(1) In addition to the activities taking place during negotiated settlements, we gathered evidence that suggests that the ACES Division Director may meet with licensees prior to the negotiated settlements with the ACAH Director. According to at least six current and former ACAH employees, the ACES Division Director routinely meets with licensees immediately before negotiated settlements. While none of the employees have been a part of these conversations, it is generally felt that the Division Director reviews the case with the licensee, including the evidence gathered to support the violations. While the Division Director denies meeting with licensees, any such activity, coupled with the large number of violations reduced and dismissed during negotiated settlements, certainly creates the appearance of an orchestrated effort to reduce or eliminate enforcement actions.

Issuance of Letters of Warning and Notices of Concern rather than actual citations - ACAH's use of Letters of Warning and Notices of Concern have limited the extent of enforcement action against violators. According to the ACES Division Director, these letters were sent to licensees when "minor" violations of the pesticide statutes and rules were committed, and were used primarily to help ensure future compliance. However, in our review of the enforcement cases investigated during a 40-month period, we found that ACAH had issued 17 Letters of Warning and 18 Notices of Concern. These represented 23 percent (35 of 151 cases) of all pesticide enforcement actions taken by the Commission during this period. Further, even though the Commission's previous Attorney General representatives appear to have been aware of the use of Letters of Concern, in late 1989 the Commission's Attorney General representative informed ACAH officials that there was no statutory authority for the use of these letters.

RECOMMENDATIONS

1. The Director should limit use of negotiated settlements to minor or first-time pesticide-related violations. Significant and/or repeat or multiple violations should be adjudicated through a formal hearing process.

2. The Commission should identify and take action against licensees with multiple violations.

FINDING III

MORE CAN BE DONE TO ADDRESS THE PROBLEM OF PESTICIDE DRIFT IN RESIDENTIAL AREAS

Pesticides drifting off target onto residential property continues to plague Arizona. The establishment of buffer zones and sensitive areas was a positive regulatory step toward minimizing drift problems. Additional efforts to research and promote more target-efficient methods and technology may offer the best opportunity to further limit off-target drift.

Drift Can Occur When Pesticides Are Applied

Pesticides can drift off a target when they are applied. Agricultural pesticides are applied either from the air using planes or helicopters, or from the ground using spray rigs or chemigation (placing the pesticide solution in irrigation water). Drift control requirements found on pesticide container labels instruct the applicator not to apply the pesticide when conditions favor drift. Drift can be caused by a number of factors, but typically occurs when pesticides are applied by air under windy conditions. In addition, if an applicator does not turn off sprayers or if sprayers malfunction in flight, overspray onto humans or residential property can occur.

Drift Continues To Be A Problem

ACAH continues to receive complaints involving pesticide drift and overspray. Aerial application, meteorological conditions, and urban sprawl into agricultural areas all contribute to the problem.

Citizen complaints - Our analysis of pesticide incidents and accidents revealed that a significant number of complaints involved pesticide drift and overspray. Of the 414 complaints received by ACAH from August 13, 1986 through December 31, 1989, 84 involved drift and 84 more involved

overspray (some involved both). In 26 of the drift-related complaints and 24 of the overspray complaints, complainants cited health problems. Property damage can also occur as a result of drift or overspray. For example, numerous complainants reported damage to foliage and vehicles.

Most of the drift and overspray complaints followed an aerial application. This is not surprising since targeting is less accurate when pesticides are applied by air. The greater the distance between the application equipment and the target, the more the pesticide is subject to the influences of weather -- wind, temperature, humidity, and the presence of inversions. According to the Texas Center for Policy Studies, about 50 percent of all pesticides applied by airborne equipment -- under ideal conditions -- actually reach their intended target area, compared to 90 percent when applied by ground-based equipment.

Urban sprawl - Population growth into former agricultural areas, particularly in Maricopa County, has increased the potential for complaints. Housing developments are now located on former agricultural land. In some cases, farming continues adjacent to or around housing. Applicators are then faced with the problem of applying pesticides to fields that may have several borders interfacing residential property.

Buffer Zones Have Been Established And Other Steps Taken

Both the Legislature and ACAH have attempted to address the problem of drift into residential areas. Buffer zones and provisions for Pesticide Management Areas (PMAs) were established by law, a step few other states have taken, and the Commission has monitored pesticide applications in "sensitive areas." Although positive, these efforts alone have not eliminated the problem of drift.

Buffer zones - The Environmental Quality Act of 1986 provided for the establishment of buffer zones in residential areas. A.R.S. §3-365 established buffer zones for schools, day-care centers, healthcare facilities, and residential housing. Buffer zone widths range from 50 to 1,320 feet, depending upon the nature of the pesticide, the type of

building adjacent to the field being sprayed, and the equipment used. For example, a highly toxic pesticide may not be applied within 400 feet of a healthcare facility, except by soil injection. Highly toxic pesticides may not be applied closer than 100 feet to a residential area by aircraft or closer than 50 feet if ground-based equipment is used. In addition, ACAH has established two PMAs, both in the Phoenix metropolitan area. PMA legislation allows certain areas to be specifically designated due to a history or problems with pesticide drift. The law requires that a pesticide applicator must notify the ACAH Director, if possible, at least 24 hours before making an application in a PMA.

In addition, ACAH monitors pesticide applications in 26 areas designated as sensitive by ACAH because these areas have a history of complaints. On a voluntary basis, applicators may call the Commission and request that an inspector monitor the application of pesticides in a sensitive area.

Pest control advisors, growers, and other industry representatives we contacted indicated that buffer zone requirements have had a positive impact. They stated that applicators are now more sensitive to community concerns when applying pesticides in residential areas, and that applicators and residents communicate more frequently.

Problems continue - Although the efforts that have been taken are generally positive, problems with drift and overspray continue. In fact, the actual number of complaints ACAH receives involving drift has increased from 14 drift and nine overspray complaints in 1986, to 29 drift and 34 overspray complaints in 1989. While these increases could be the result of a number of factors, and do not necessarily indicate a growing problem, they clearly suggest that people living near agricultural areas continue to be concerned about pesticide drift and overspray.

Additional Efforts Are Needed To Promote More Target-Efficient Application Practices

Research and promotional efforts designed to develop and implement widespread use of more target-efficient application methods may afford

the best opportunity to further limit the problems of drift. Research into the use and potential benefits of ground-spraying equipment, adjuvants (agents added to change the physical characteristics of a solution or emission), and technological innovations are needed.

Arizona has implemented most of the available regulatory options to control drift. The Texas Center for Policy Studies has compiled several recommendations for states seeking methods to control drift. As recommended by the Center, Arizona, unlike many other states, has established buffer zones and identified areas particularly sensitive to pesticide drift. Arizona has also made provisions for establishing PMAs that require notification before a pesticide application, and has mandatory certification and recertification programs for applicators. In addition, Arizona has an active Integrated Pest Management Program, although additional resources are needed to achieve optimum benefits from the program (see Finding V, page 39). While ACAH could improve its implementation and enforcement of existing regulatory requirements (see Findings I and II), few new policy options are available.[1]

Research needed - The best opportunity for further advances in controlling drift may lie in researching and promoting more target-efficient application methods. For example, ground spraying has the potential for significantly reducing drift and overspray problems. When pesticides are applied by ground rigs rather than by air, targeting is more accurate, and wind, humidity, and temperatures have less influence.

During our audit we visited several cotton and vegetable farms and spoke with operators of others that use ground spraying almost exclusively in lieu of aerial application. The farmers we spoke with claimed they reduced pesticide usage and costs by 30 to 50 percent. Three growers

---

(1) According to the Texas Center for Policy Studies, remaining regulatory options include instituting land-use controls and banning Ultra Light Volume (ULV) spraying.

with fields in sensitive areas also indicated that they use ground rigs to minimize citizen complaints. However, certain growers questioned the feasibility of using ground rigs because fields are muddy following irrigation, making mature cotton difficult to penetrate, and ground rig applications require more time than aerial applications. More research is needed to explore the benefits some farmers have claimed, and also to determine the practicality and feasibility of using ground application equipment in residential areas.

Research is also needed on the use of adjuvants. Adjuvants are added to a pesticide solution to increase droplet viscosity. Increased viscosity reduces the effects of wind, temperature, and humidity, and thus helps minimize drift. Several applicators reported using adjuvants on a regular basis near residences, and believe such use at points of urban/agricultural interface could reduce pesticide incidents. One applicator reported adjuvant costs to be minimal. However, one reported drawback to use of adjuvants is that they do not provide coverage that is as effective as a finer mist.

Finally, research and promotion of more target-efficient technologies is needed. The chairman of the Commission, who has testified at the Federal level on this subject, indicates that technological innovations may be available that could be implemented on a more widespread basis in Arizona as well as other states. He said that few technological improvements have been made in spray equipment, nozzle design, and other application hardware that is used in the United States. In contrast, efficient, more modern technology has been developed and is being used overseas.

Neither ACAH nor the University of Arizona have any research projects that focus on application practices or technology that could reduce drift. Both need to do more. The University could develop a research effort, and ACAH could promote and encourage the use of drift-minimizing techniques or technologies that appear practical and feasible. ACAH could also work with the University of Arizona Cooperative Extension Service to develop information and demonstration projects designed to implement more target-efficient application methods.

RECOMMENDATIONS

1. ACAH should sponsor studies of pesticide application methods for purposes of identifying methods and technologies that could be used in residential areas to reduce drift.

2. ACAH should enlist the support of the University of Arizona Cooperative Extension Service in developing research efforts focusing on pesticide application practices and technological innovations that may offer the possibility of controlling drift and increasing target efficiency.

FINDING IV

IMPROPER DISPOSAL OF PESTICIDE CONTAINERS HAS BEEN WIDESPREAD

Improper disposal of empty pesticide containers can pose a threat to public health and the environment. We found that improper disposal of pesticide containers in Arizona is affecting people, land, and water. In addition, cleanup and remediation of illegal disposal sites are expensive. Because there are many reasons for improper disposal, including cost, inconvenience, and a lack of disposal sites in some areas of the State, Arizona should consider adopting any of several programs implemented by other states to encourage proper pesticide container disposal.

Background

Agricultural pesticides, when not delivered in bulk containers, are packaged in containers made of plastic, metal, or paper, in various sizes up to 55 gallons.

Both ACAH and DEQ are responsible for enforcing the various Federal and State requirements pertaining to disposal of empty pesticide containers. Typically, under these requirements, a plastic or metal container must be triple-rinsed, punctured and crushed prior to disposal, and then deposited at a landfill or buried on the farmer's property. Some containers can be burned, and others can be recycled or reused, if properly handled. However, until properly rinsed, pesticide containers are considered hazardous waste and are subject to more stringent disposal requirements. In recent years, ACAH rules have required grower identification numbers be placed on pesticide containers to aid enforcement efforts.

Improper Pesticide Container Disposal Occurring Statewide

Improper pesticide container disposal has been widespread throughout the agricultural regions of the State. We found several instances in which

people, particularly children, became ill through contact with improperly discarded pesticides and pesticide containers. We also found remediation of disposal sites has been costly.

Improper pesticide container disposal widespread - Improper pesticide container disposal has occurred extensively throughout the agricultural regions of Arizona. Surveys by Federal and State officials found illegal disposal sites along the upper and lower Gila River and the Mohawk Canal. The Bureau of Land Management's 1988 survey discovered approximately 100 illegal dump sites. The Bureau, which assumes responsibility for fire control around the river, was concerned this land could not be afforded adequate fire protection due to the presence of hazardous waste disposal sites. In 1988, ACAH staff also surveyed the upper Gila River and found numerous illegal disposal sites. In early 1990 when Auditor General staff accompanied State officials on an inspection of illegal dump sites between the lower Gila River and the Mohawk Canal, over 200 older and recently discarded containers were found. Some, deemed hazardous by DEQ, required special cleanup.

Federal, State, and Indian lands also suffer from illegal pesticide container disposal. We interviewed officials representing agencies dealing with these lands, and they offered the following information.

- **The Bureau of Reclamation** found three illegal disposal sites near Wellton and others along the Colorado River.
- **The Bureau of Land Management**, in 1988, discovered approximately 100 sites along the Gila River, including 30 to 40 illegal dump sites near the Mohawk Canal.
- **The Inter-Tribal Council** told us that the Gila River Indian Reservation suffers from the illegal dumping of pesticide containers from small farm operations nearby. In addition, reservations have also had to deal with old landfills containing banned pesticides and problems at abandoned aerial applicator sites.
- **The Department of Administration** listed the Picacho Peak dump site and two airstrips currently under investigation.
- **The State Land Department** has identified a few dump sites, which have pesticide containers.
- **The Game and Fish Department** has cleaned up several dump sites along the lower Gila River in 1990.

Health and environmental impacts of improper disposal - Improper disposal of pesticides and pesticide containers can impact human health either through direct contact with the chemicals or indirectly through chemicals in the water supply.

Our review of DEQ pesticide incident files discovered six cases in which from one to eight people became ill as a result of exposure to discarded pesticide containers. In three of these cases children were hospitalized.

Migrant workers are also exposed to improperly discarded pesticide containers. DES Community Legal Services informed us of several instances in which migrant workers used pesticide containers for carrying water, for cooking, and as furniture. According to DES, migrant workers are not always aware of the inherent dangers of pesticide exposure.

Human health is also indirectly threatened by the presence of pesticide residues in soil and water. Our review of pesticide-related incidences found 13 cases of soil contamination as a result of improperly discarded pesticide containers. Although DEQ has not thoroughly investigated many of these cases, the Department did confirm ground water contamination in one case due to improper pesticide disposal.

Remediation of illegal disposal sites costly - DEQ has been delegated authority by the EPA to clean up most hazardous waste sites in Arizona. However, remediation of illegal disposal sites has been costly to the public. DEQ has overseen the cleanup of several illegal disposal sites, and is in the process of evaluating several others for possible remedial action. According to DEQ, 15 sites containing discarded pesticides have been or are being remediated either by a public agency, or by the negligent party in response to a DEQ enforcement action. The EPA has conducted one major cleanup that cost approximately $125,000 on the Cocopah Indian Reservation in Yuma County. In 1986, the State Land Department supervised a $300,000 cleanup of a site on State Trust Land

near Picacho Peak. Stricter EPA remediation requirements will result in even more expensive cleanups.[1]

Several Reasons Cited For Illegal Disposal

The industry and regulatory officials we interviewed cited several reasons for the illegal disposal of pesticide containers, including inconvenience, lack of available disposal facilities, and cost.

- **Inconvenience** - Pesticide users far from urban centers or public landfills may illegally discard containers because of the time necessary to transport them to a proper disposal site. As previously mentioned, the Gila Indian Reservation has been a dumping ground for small farm operations nearby.

- **Lack of available facilities** - Growers also cite scarcity of proper disposal facilities in some counties. According to the Bureau of Land Management, improper disposal along the Gila River was attributable, in part, to the closure of pesticide container dumping at a county landfill. Because of concerns about future liability, some landfills now prohibit the dumping of pesticide containers.

- **Cost** - Proper container disposal can also be costly. According to the Arizona Agricultural Aviation Association, to properly dispose of pesticide containers, it costs more than $1 for every gallon of pesticide. Costs may be even higher for private applicators that do not have the advantages of scale as do custom applicators.

During our audit, pesticide industry officials and pesticide users expressed to us their concerns about improper container disposal. According to an Arizona Agricultural Chemical Association official, the industry supports recycling pesticide containers, and several manufacturers are planning to start recycling programs within a year. Some manufacturers have already begun using a water soluble bag that dissolves along with the pesticide. Growers indicated that illegal

---

(1) The Cocopah Indian Reservation cleanup involved 103 containers, 101 gallons, and 110 pounds of pesticides and other agricultural chemicals. Several of them, such as 32 gallons of Methyl Parathion, were extremely toxic. The Picacho Peak cleanup involved over 700 containers most of which were empty; however, the soil was contaminated with DDT to an eight-foot depth and Toxaphene to a six-foot depth. The soil was immobilized and placed in isolation on the site for 30 years. According to a DEQ official, to comply with the current, more stringent EPA clean up requirements, the soil would now have to be treated off-site, and the cost of this cleanup would have escalated to over $10 million.

disposal sites can appreciably affect property values and are expensive to remediate. Several growers suggested that the best solution would be to reuse or recycle containers, and place a deposit on them to help ensure their return.

Other States Have Addressed Improper Disposal Problem

Arizona should consider adopting any of several programs developed in other states to address improper pesticide container disposal. Because the State cannot provide on-site enforcement at all possible illegal dump sites, it is important to develop a strong program with adequate incentives to encourage proper disposal. At the present time, Arizona does not have a comprehensive program that addresses pesticide container disposal. The programs implemented in other states that are described below provide examples of strong approaches and incentives for the proper disposal, recycling, and reuse of pesticide containers.

- **Maine** - In 1983, the state of Maine adopted the Maine Act to Provide for the Return and Proper Disposal of Pesticide Containers. This program requires dealers to collect a cash deposit or post credits for each container of limited- and restricted-use pesticides. Deposits range from $5 (for containers less than 30 gallons) to $10 or more (for containers of 30 gallons or more). The dealer affixes an alphanumeric tag to each container that identifies both the dealer and the buyer. The dealer also provides buyers of restricted-use pesticides with an affidavit listing all restricted-use containers (with sticker numbers) that are to be returned, and on which the applicators certify that the containers were triple rinsed. The Board of Pesticide Control inspectors verify the presence and proper condition of the containers listed and validate the affidavit, and the dealer either returns the cash deposit or credits the applicator's account. The containers are returned either to the dealer's place of business or to an authorized collection, disposal, or recycling facility as arranged by the dealer.

- **Oregon** - The Oregon Pesticide Container Management initiative is a voluntary pesticide container collection, recycling, and disposal program initiated in 1984 by the Oregon Agricultural Chemical Association and the Oregon Farm Bureau in response to threats of a mandated program. The program established 16 collection sites throughout Oregon for two days, usually in the spring, but sometimes in the fall. The program maintains strict standards for rinsing, crushing, and storage, and allows metal containers to be recycled into fence posts and re-bar, plastic containers to be taken to landfills, and glass to be either recycled or used as landfill. Initially, rejections ran 3 to 4 percent, but maintenance of strict standards has reduced this rate to less than 1 percent. The program, which collects approximately 20,000 containers annually, is highly regarded by Oregon pesticide regulators.

- **Mississippi** - Following a successful pilot project in one county, which was funded by a major chemical company and the EPA, the Mississippi container disposal project is now being expanded throughout the state. The program, managed by the state's plant industry division, involves only plastic pesticide containers. The containers, pressure rinsed using inexpensive devices provided by the chemical companies for the farmer's use, are collected at a designated point, baled at a cotton gin, and shipped out-of-state for recycling. Residue tests are also being conducted to evaluate the feasibility of recycling into other types of plastic containers.

- **Iowa** - Funded as an EPA enforcement project with an initial grant of $70,000, the Iowa Pesticide Container Recycling Program, like the Mississippi program, focuses on plastic containers. (An Iowa survey found that more than 90 percent of the estimated 2.5 million containers delivered annually in the state were plastic.) In the Iowa pilot program, inexpensive pressure rinsing devices will be used to the greatest extent possible. The rinsed plastic containers will be accepted and stored at participating county landfills. Once a year the containers will be granulated on the landfill by a portable grinder and the granules will then be recycled into speed bumps and other products. According to Iowa regulators, if revenues from the sale of the plastic granules fail to support the recycling program, as is expected, a fee on the sale of pesticides will be considered.

- **Minnesota** - 1989 Minnesota legislation directs the department of agriculture to design and implement a pilot collection project to be completed by June 30, 1991. This legislation also mandates that effective July 1, 1994, anyone selling pesticides in Minnesota must accept from pesticide end users, empty pesticide containers and unused portions of pesticides that remain in the original container. Use of refillable and reusable pesticide containers is not precluded. According to the project manager, the Minnesota pilot project will also be limited to plastic containers.

RECOMMENDATION

Both ACAH and DEQ should review programs established in other states and work with the Legislature and the pesticide industry to develop a container disposal program for Arizona that would include consideration of the following program features:

- a deposit on all returnable containers;
- a requirement that pesticide manufacturers and sellers must accept used containers;
- the establishment of recycling programs; and
- a requirement to use returnable containers, when possible.

FINDING V

CAN ARIZONA DO MORE TO REDUCE THE USE OF AGRICULTURAL PESTICIDES?

Should Arizona place more emphasis on development of pest control methods that do not rely as heavily on synthetic pesticides? Experience in Arizona and other states shows an effective program of integrated pest control benefits both the agricultural industry and the environment. However, due to resource constraints, the impact of Arizona's programs to encourage use of pest control alternatives has been limited. By implementing innovative funding alternatives used in other states to provide additional resources for Arizona's Integrated Pest Management programs, more could be done to encourage the adoption of alternative pest management strategies.(1)

What Is Integrated Pest Management?

Integrated Pest Management (IPM) is defined as "the selection, integration, and implementation of pest control actions on the basis of predicted economic, ecological, and sociological consequences."(2) Integrated Pest Management systems utilize both chemical and nonchemical methods such as cultural and biological control and field scouting, to suppress pest proliferation. These techniques may be used to control insects, weeds, nematodes, and plant pathogens.

Arizona has a long history of involvement with techniques and practices which today could be included within the definition of IPM. Dating back to its territorial days Arizona employed quarantine inspectors to inspect

---

(1) The Office of the Auditor General acknowledges the National Conference of State Legislatures (NCSL) for their assistance in this area. Gordon Meeks, a policy specialist with NCSL, provided valuable information about Integrated Pest Management and sustainable agriculture programs in other states.

(2) Rabb, R.L. "Principles and Concepts of Pest Management." Implementing Practical Pest Management Strategies: Proceedings of National Extension Insect-Pest Management Workshop. 1972.

for and prevent the importation of pests in nursery stock. These inspections eventually led to the Plant Quarantine Inspection Stations operated today at the borders of the State. Arizona also uses interior quarantines and other programs to control pests with the minimum amount of pesticide needed. A major program is the Boll Weevil program which is currently in operation. This program, which is heavily funded by the cotton industry through a surcharge on each bale, involves extensive monitoring and selective treatment of fields for infestations. By more effectively targeting applications, Arizona has been able to reduce both the levels of infestations and the number of acres treated with pesticides.

Although Arizona has long been involved with methods now considered to be a part of IPM, the 1986 Arizona Environmental Qualify Act (EQA) mandated that ACAH expand its IPM efforts. The EQA required ACAH to establish a specific IPM program be established within ACAH containing research, instruction and development components. The goal of the program is to develop additional economically viable pest control alternatives that will allow agricultural producers to reduce their use of chemical pesticides.

In addition to ACAH's program, the University of Arizona also has an IPM program within its cooperative extension service. This program is required under the Federal Smith-Lever Act in order for the states to receive Federal IPM grants. This program's objectives are grower education and the implementation of IPM programs.

Arizona Could Profit From Expanded Integrated Pest Management Programs

Greater use of Integrated Pest Management techniques to control agricultural pests could benefit both Arizona's agricultural industry and the environment. Pest control expenditures are a major cost in agricultural production. IPM programs in Arizona and other states have reduced industry costs and increased profits. These programs have also provided environmental benefits. Arizona could yet reap greater benefits by expanding its IPM efforts.

Pest control is one of the major costs of the agriculture industry. In the production of cotton, Arizona's largest agricultural commodity, only

the costs of land and water exceed those of pest management. Each year, Arizona cotton growers spend an average of $100 or more per acre for insect control. Greater use of IPM methods could reduce growers' expenditures for pesticides and, thereby, increase profits. Utilization of IPM techniques, such as field scouting, can also increase the efficacy of pesticide applications, assuring that pesticides are necessary and applications are made at the appropriate time.

Results in other states - Agricultural producers in a number of other states have benefited from IPM programs. A 1987 evaluation of cooperative extension service IPM programs for nine agricultural commodities in 15 states found that "IPM users experienced an increase in net returns over nonusers of over $578 million per year."(1) The coordinator for the Texas Agricultural Extension Service's IPM program reports that its IPM projects have a net positive impact of $1.5 billion annually on the state's economy. Finally, a 1989 USDA survey of extension IPM coordinators, identified several economic benefits from extension IPM programs in a number of states. For example, Alabama reported a $4.5 million benefit from a cotton IPM program and a $3.85 million profit from the utilization of IPM methods in pecan production. Illinois reported saving $66 million in insecticide expenditures by utilizing crop rotation in the production of corn, and a $60.5 million saving in insecticide costs from a black cutworm program. By lowering the application of insecticides on 200,000 acres, Louisiana's soybean IPM program generated an estimated saving of $6 million.

Utilization of IPM methods also can provide environmental benefits. The use of pesticides has been linked to a number of environmental and health problems. For example, pesticide contamination has been found in Arizona's ground water as a result of applications of agricultural chemicals. Pesticide residues are commonly found in food, generating concern over the potential long-term effects of pesticides on human health. Adoption of IPM techniques can significantly reduce the use of

---

(1) The National Evaluation of Extension's Integrated Pest Management (IPM) Programs, Virginia Cooperative Extension Service, February 1987.

pesticides. For example, implementation of a boll weevil cultural control program in the Rio Grande Valley of Texas resulted in an annual reduction in the use of 650,000 pounds of insecticides.

The establishment of an IPM program for vegetable production in the Rio Grande Valley reduced the use of pesticides on carrots produced for baby food, soups, and frozen foods by 66 percent. Insecticide use on cabbage in this area has also been reduced by 44 percent. In New York State, potato growers utilizing IPM methods used 21 percent less fungicides and 7 percent less insecticides, than growers that did not use IPM methods. Finally, California reported a 10 percent reduction in the use of herbicides in rice production as a result of an extension service IPM program.

Arizona's experience - Integrated Pest Management programs in Arizona have also yielded a number of benefits for growers and the environment. The former coordinator of the University of Arizona Cooperative Extension Service (CES) IPM program reports that, as a result of IPM programs aimed at boll weevil control, the number of insecticide applications on cotton in central Arizona was reduced from an average of 17 in the mid-1980s to approximately seven in 1989. IPM programs for cotton in western and eastern Arizona are estimated to have eliminated the need for two applications of insecticides on 65,000 acres, saving an estimated $1.3 million. In addition, an IPM program designed to control the Russian wheat aphid in southeastern Arizona is estimated to have saved wheat and barley growers approximately $500,000.

Although Arizona has obtained significant results from some of its IPM efforts -- most notably the boll weevil program -- more can be done. Arizona could reap additional benefits from increased IPM program implementation. For example, if improved cultural control was practiced, extension IPM program staff estimate that the use of agricultural pesticides in the State could be reduced 50 percent. As previously mentioned, cotton is Arizona's largest agricultural commodity. Significant amounts of insecticides are used to control cotton pest problems. Cultural control methods have proven to be an effective means of suppressing two primary cotton pests, the pink bollworm and the boll weevil.

The State's IPM Programs Have Had Limited Resources

To date the impact of Arizona's Integrated Pest Management programs has been limited. Resource constraints have hampered the effectiveness of IPM programs established within ACAH and the University of Arizona Cooperative Extension Service (CES).

Arizona's IPM programs - Due to resource constraints, the effectiveness of the Integrated Pest Management programs established by ACAH and CES has been limited. An overview of the staffing and funding levels for the IPM programs operated by ACAH and CES during fiscal years 1988 through 1990 is shown in Table 7 (see page 44). During this period, 7.5 Full-Time Equivalent (FTE) positions were assigned to Arizona's IPM programs.

State funding for Arizona's IPM programs has declined significantly during this period. In fact, State funding for the Commission's IPM program declined approximately 50 percent between fiscal years 1988 and 1990. In addition, the Federal funding authorized by the Smith-Lever Act for CES IPM programs, has not been increased in the past ten years.

TABLE 7

ARIZONA IPM PROGRAMS
STATEMENT OF FULL-TIME EQUIVALENTS (FTEs) AND EXPENDITURES(a)
FISCAL YEARS 1987-88 THROUGH 1989-90
(unaudited)

	1987-88	1988-89	1989-90
ACAH IPM Program			
FTEs	3.5	3.5	3.5
State	$182,252	$147,864	$ 91,684
Federal(b)	19,953	87,365	108,400
Total	$205,205	$235,229	$200,084
CES IPM Program			
FTEs(c)	4.0	4.0	4.0
State	$712,487	$628,857	$560,708
Federal	80,000	80,000	79,000
Total	$792,487	$708,857	$639,708

(a) Dollar figures provided by the University of Arizona reflect the amount budgeted at the beginning of each year, and may not represent actual expenditures.

(b) The Federal government provides funding for ACAH's trapping programs for the Mediterranean fruit fly, the fire ant, and the gypsy moth.

(c) In addition to the four FTEs allocated specifically to the Extension Service's IPM program, a number of CES staff are involved in IPM research activities.

Sources: Office of the Auditor General staff analysis of budget and staffing information provided by Arizona Commission of Agriculture and Horticulture and the University of Arizona.

Given limited funding, the Commission's IPM program has focused largely on monitoring for exotic pests in Arizona. However, much of this effort was already underway before the IPM program was implemented. The Commission's other IPM efforts in other areas have been moderate.

For example, although ACAH has allocated $252,830 for IPM research, only eight research grants have been awarded since the program was established in 1987, and no research grants have been awarded since October 1989.

Although one of the first agencies in the country to establish an IPM program, the University of Arizona Cooperative Extension Service IPM program is also limited. The Extension Service conducts research to devise alternative methods of pest control. However, efforts to develop IPM educational programs and field demonstrations of IPM methods have been limited. For instance, CES research indicates that the use of pesticides on cotton could be substantially reduced if growers adopted strict cultural control methods. However, some growers have yet to be convinced of the benefits of more stringent cultural control practices. The growers we spoke with criticized CES for its lack of field demonstration projects for new IPM technology and methods.

Innovative Funding Alternatives Could Generate Additional Resources For Arizona's IPM Programs

Adoption of alternative funding mechanisms could provide additional revenues for the State's IPM programs. The IPM programs operated by ACAH and CES have requested additional resources to support and expand their efforts. Other states have implemented innovative funding approaches to support IPM and sustainable agriculture.

The IPM program supervisors at both ACAH and CES have requested additional funding for their programs. The Commission's IPM supervisor requested additional funding in both 1989 and 1990. In 1990, the program supervisor requested $200,000 to support research grants and $200,000 for development of IPM programs. The IPM supervisor also requested additional staff for the program. The Extension Service's IPM program also requested additional funding as well as 12.5 additional FTEs for fiscal year 1989. None of these ACAH or CES requests were funded.

Other states have developed alternative sources of funding for IPM and sustainable agriculture programs. Some funding for both Iowa's and Minnesota's programs was obtained from oil overcharge revenues (money oil companies were required to refund to the states). However, Iowa, Minnesota, and California provide ongoing funding for their IPM and sustainable agriculture programs through fees on pesticides. Iowa's pesticide registration fee is based on the annual gross sales of the

pesticide. Registration fees range from a minimum of $250 to a maximum of $3,000 per year in Iowa. Iowa has also established a tax on fertilizer sales of 75 cents per ton. Together, the pesticide and fertilizer fees generate approximately $2 million per year. Approximately $800,000 of this revenue is allocated to the Leopold Center for Sustainable Agriculture. Minnesota also has established fees for pesticide and fertilizer sales, and bases its pesticide fee on gross sales. Registrants are to be charged 0.10 percent of their annual gross sales to register pesticide products for 1990. However, the minimum annual fee for pesticide products is $150. California registers approximately 12,000 products annually, and charges registrants $200 per product. California has also established a tax on pesticide sales. The fee is currently 0.90 percent of gross annual sales and generates over $8 million annually. In addition, California places a surcharge on licenses for produce dealers and processors.

Arizona could generate a substantial amount of additional revenue if the State charged a higher pesticide registration fee or adopted a tax on the sale of pesticides. As of July 31, 1990, there were 7,708 pesticides registered in Arizona. Arizona recently increased its pesticide registration fee to $100 per product per year to generate additional resources for the Water Quality Assurance Revolving Fund. If Arizona further increased its registration fee to $150 per product (the minimum amount charged in Minnesota), the State could generate an additional $385,400 for IPM and other pesticide-related programs. Adoption of a $200 registration fee, as in California, or a $250 fee, the minimum charged in Iowa, would generate an additional $770,800 or $1,156,200, respectively. If the registration fee was based on total pesticide sales, a significant amount of additional revenue could be generated.

Another possible source of funding for Arizona's IPM programs might be the USDA's Low-Impact Sustainable Agriculture (LISA) program. This program began issuing grants for IPM and sustainable agriculture projects in 1988. Currently, the LISA program is budgeted approximately $4.45 million, most of which is awarded as grants. A consultant with the LISA program said that few grant proposals have been received from Arizona.

RECOMMENDATIONS

1. The Commission of Agriculture and Horticulture should request additional funding for the IPM research and educational programs required by A.R.S. §3-381 et seq.

2. ACAH should encourage the University of Arizona to request additional funding that emphasizes IPM education and field demonstration activities for its Cooperative Extension Service IPM program. Additional staffing necessary to support dissemination of IPM technology to Arizona's agricultural producers should also be considered.

3. The Legislature should consider increasing pesticide registration fees, and implementing a tax on the sale of pesticides to support programs aimed at developing economically viable alternatives to agricultural pesticides.

FINDING VI

A MORE COORDINATED AND COMPREHENSIVE PESTICIDE REPORTING SYSTEM COULD BENEFIT THE STATE

Arizona's pesticide reporting system provides some important sales and use information; however, certain changes could greatly improve our knowledge of pesticide usage in the State. Although Arizona's current requirements for reporting sales and use information are as stringent as those of other states, certain information is missing, and the information that is available is difficult to access. The proposed Department of Environmental Quality (DEQ) requirements would overlap existing ACAH requirements and could duplicate effort.

Current Reporting Requirements Are Not Comprehensive

Although Arizona's reporting requirements compare favorably with those of other states, much pesticide use does not have to be reported.

Present requirements - Present reporting requirements vary and are different for each of the four categories of pesticide users and sellers.

- **Custom applicators** (those who apply pesticides for hire or by air) are the only group required to report all pesticide use to the State.
- **Sellers** must maintain records of all pesticide sales for two years. Although they do not report to ACAH, their records are subject to review.
- **Private applicators and regulated growers** must maintain records of Restricted-Use Pesticides (RUPs) for two years. Like sellers, they are not required to report such use to the State; but ACAH may inspect their records. Private applicators and regulated growers are not required to maintain records for non-RUPs.

Arizona compares favorably with other states - Of the six states recommended by our consultants for comparison, only California appears to require more comprehensive use reporting. Unlike Arizona, three of the states surveyed require sellers to report sales periodically to the State.

Arizona and California only require sellers to maintain sales records for two years. However, of the six states, only California requires more of pesticide users. Pest Control Operators (PCOs) must report all pesticide use within one week of application, while growers who do not hire PCOs must report pesticide use by the tenth day of the month following application. Unlike Arizona, those who apply pesticides to golf courses, cemeteries, ditchbanks, etc. in California must also report their usage. In addition, users of RUPs (except structural applicators) must notify the county agricultural commissioner prior to application. Aside from California, only Arizona requires custom applicators to report pesticide use to the State soon after application. The other states contacted only require users to maintain records or to report annually.

Information gaps exist, and obtaining current information is difficult - Even though Arizona's use reporting requirements are more stringent than those of most states we contacted, much pesticide usage goes unreported. For example, private applicators and regulated growers who use non-RUPs are not required to maintain records of use, even though non-RUPs outnumber RUPs. Potentially heavy pesticide users such as State and local governments, irrigation districts, Indian tribes, structural applicators, and those applying pesticides to golf courses and cemeteries are not required to report.

The information currently maintained by sellers and users or even that reported to ACAH is difficult to access. Although sellers and some users maintain quantitative pesticide information, ACAH does not compile this data. The information ACAH gathers (i.e., custom applications) is not readily available. To obtain quantitative pesticide sales information for our survey, we had to personally contact all 104 permitted sellers of pesticides in the State and request sales information (see Report #90-6, pages 21 through 26). We did not attempt to secure the records of private applicators or those of regulated growers because these records are maintained by hundreds of applicators and growers throughout the State, and contacting them would have been impractical due to time constraints. Finally, even though ACAH receives and enters custom application records, their data base is not readily accessible for analysis. The data is maintained by the Department of Administration,

and it took our staff several weeks to obtain the tapes containing all of the 1989 custom application records.

Proposed Rules By DEQ May Further Complicate The Reporting System

Proposed DEQ requirements may cause further reporting fragmentation. DEQ, in a preliminary draft of rules for pesticide contamination prevention, proposes that sellers and users of pesticides on the Ground Water Protection List[1] report such sale or use to DEQ. Sellers of pesticides on the list would have to file quarterly sales reports, while applicators would have to report their use of pesticides on the list no later than the Monday following the date of application. Pesticides on the list may or may not be Restricted-Use Pesticides, and RUPs may or may not be on the list. Many pesticides are not on either list.

Although the new rules for reporting pesticide use information are designed to correspond with ACAH's current reporting requirements and prevent duplicative effort, it will be important for the agencies to coordinate their effort to avoid duplication.

A Coordinated And More Comprehensive Reporting System Would Be Beneficial

A reporting system that is coordinated among State agencies and is more inclusive, may assist both the State and those required to report pesticide sales and use. A single, shared data base maintained by one agency could centralize records while allowing other agencies access to the information necessary to perform their work. ACAH and DEQ officials agree that only one agency should maintain the data base. Such a system could eliminate confusion, assist those required to report, and be more cost-effective. ACAH has already proposed a system that could be maintained solely by ACAH, but would be capable of generating reports for other agencies. An ACAH official stated that requirements of other agencies could be programmed into the system, allowing them to access only the information necessary to their agency. For example, ACAH could maintain the data base, but DEQ would be allowed to access

---

(1) Pesticides on the Ground Water Protection List are those that may have a tendency to leach through soil into ground water.

sales and use information of the pesticides on the Ground Water Protection List. Other agencies such as the Department of Health Services, and the Game and Fish Department could also access the data base for pesticide use information. Finally, the public could be better served if information entered by ACAH was readily available.

A coordinated system, if properly implemented, could allow Arizona to achieve the best of two worlds -- more comprehensive reporting and easier reporting requirements. For example, without a coordinated system, sellers will have to maintain records of all sales for ACAH, and then have to selectively report certain sales information to DEQ. Under a coordinated system, sellers could simply report all sales information to one agency. This would increase the comprehensiveness of reporting and eliminate the need for sellers to file two sets of information with two separate agencies. Growers, applicators, and dealers would then need to send pesticide reports to only one location when such reporting is required. The prospect of sending the same or similar reports to more than one agency could be eliminated.

RECOMMENDATIONS

1. ACAH in conjunction with other agencies that could benefit from pesticide use and sales information, should evaluate the need for a more comprehensive and coordinated reporting system. Comments from users and sellers should also be solicited. The system should include the following components:

    - a single data base maintained by one agency that would allow other agencies to access pertinent information;
    - one form each for users and sellers that should be sent to only one agency; and
    - the capacity to generate reports on the use and sales of pesticides.

2. The Legislature should consider mandating a comprehensive, unified pesticide reporting system.

FINDING VII

ACAH NEEDS TO REVISE ITS RULES ESTABLISHING ENFORCEMENT PENALTIES

ACAH needs to strengthen the administrative rules that establish the basis for taking specific enforcement actions and assessing penalties for violations. Current rules are too weak and dilute the Commission's ability to adequately penalize violators. In addition, definitions of the various types of violations are too limited in scope and need to be expanded.

Point/Penalty Rule Establishes Framework For Enforcement

A.R.S. §3-363(13) requires ACAH to establish a system of administrative penalties and fines for violation of the pesticide statutes and rules. The system is intended to provide for more severe penalties when a violation results in injury, poisoning, or a citation. The statute requires that points be assessed for each violation. The number of points assessed would depend on the consequences of the violation, the culpability of the violator, the wrongfulness of the conduct, prior violations, and other factors.

In September 1989,, ACAH promulgated Administrative Rule R3-10-506, its point system for administering penalties and fines (see Appendix). The rule specifies, for the factors set forth in statute, a range of points that may be assessed based on the circumstances for each violation. As shown in Table 8 (see page 54) for example, a violation that results in the poisoning of workers or the public can be assessed up to 100 points. If environmental damage occurs (such as water or soil contamination) up to ten points may be assessed. Based on the total number of points assessed, appropriate enforcement action can be determined. The rule provides a schedule establishing a range of disciplinary actions depending on the type of violation and the points assessed. For example, a nonserious violation with 53 points or less could result in a fine of

$1 to $150 and a one- to three-month probation. A nonserious violation with 108 points or more could result in a fine of $301 to $500 and a seven- to twelve-month probation.

Points are assessed by the hearing officer when the case goes to an administrative hearing. If the case is resolved through a negotiated settlement, points are supposed to be computed by the ACAH Director for each violation.

TABLE 8

ARIZONA COMMISSION OF AGRICULTURE AND HORTICULTURE POINT SYSTEM FOR ADMINISTERING PENALTIES AND FINES

Category	Range of Points
Health Effects	0 to 100
Environmental Consequences and Property Damage	0 to 10
Culpability	0 to 50
Prior Violations	0 to 70
Length of Time Violation Continued	0 to 40
Wrongfulness of Conduct	1 to 50

Source: Arizona Administrative Code Rule 3-10-506.

Point/Penalty Rule May Hinder Effective Enforcement

Provisions of the point/penalty rules as currently written may hinder the Commission's ability to take effective action against violators. The Commission's former Attorney General representative expressed concerns that the rule does not provide sufficient penalties for improper conduct.

Attorney General concerns - The Commission's former representative from the Attorney General's Office pointed out deficiencies in the rule that hamper effective enforcement. In a November 1989 memo to his superiors, he suggested the following problems with the current rule:

- **The rule does not adequately address or provide punishments for conduct which may have a potential for substantial harm, but which has not resulted in actual harm.** While the rule allows the assessment of up to 100 points for violations with health effects, in reality it only provides for the assessment of one to five points against an applicator in a case in which there is no immediate impact upon public health, safety, or property. This assessment is so minimal that it will not make any impact upon effective enforcement.

- **The rule limits the Commission's discretion in invoking severe sanctions, such as suspension or revocation of a license.** While A.R.S. §3-370 authorizes the Commission to order an applicator's certificate to be revoked, suspended, or put on probation, not renewed, or denied for any nonserious or serious violation, the rule requires the Commission to first use probation before imposing more severe sanctions. Only after a second serious or nonserious violation has occurred, may the applicator be subject to more serious punishments.

The present Assistant Attorney General assigned to ACAH shares the former representative's concern that the point/penalty rule hampers effective enforcement. She stated that even assessment of the maximum number of points for a violation results in what should be considered minimum fines and penalties.

We agree with the former Assistant Attorney General, and have some additional concerns with the rule:

- **The points assigned to violations are insufficient.** Considering the number of points necessary to assess a fine or penalty, the points assigned, particularly in the area of environmental consequences and property damage, are insufficient. For example, the penalty range of one to ten points for a bird kill is the same as the penalty range of points for killing one or more endangered species. Points for violations should either be increased, or the point totals necessary to impose penalties should be lowered.

- **The rule should include definitions for repeated de minimis violations.** Although A.R.S. §3-361.2 states that "repeated de minimis violations constitute a nonserious violation," the rule

provides no guidelines as to the number of de minimis violations that constitute a nonserious violation. Repeated de minimis violations should be defined. Further, two types of de minimis violations should be included in the definition (i.e., when the same violation is repeated or when there is a subsequent de minimis violation, but not the same one).[1]

- **The points assessed for prior violations should include all violations dating back three years.** Under the prior violations section, the rule provides that only citations in the last three years (1987-1990) will be assigned points. ACAH has interpreted this to apply only to violations occurring after November 1987, when its pesticide enforcement rules were adopted. Therefore, if someone had violations prior to when the rules were adopted, the Commission can use these prior violations to potentially increase the penalty for subsequent violations.

Definitions Of Violations In The Rules Could Be Expanded

In addition to changes needed in the point/penalty rule, the definitions of the types of violations set forth in other ACAH rules also need to be revised. The rule establishing serious violations is inconsistent with statute and too limited in scope. Further, some violations currently noted in the rules may need reclassification since they appear to fall within the statutory definition of a serious violation.

Rule defining serious violations is inconsistent with statute - Based on a comparative review of the statutes and rules governing pesticide regulation, we noted that the rule establishing serious violations is inconsistent with the statute, and is too limited in scope. A.R.S. §3-363(12) requires that ACAH establish a nonexclusive list of acts and omissions that constitute serious, nonserious, and de minimis violations. Serious violations are those acts which produce "...a substantial probability that death or serious physical harm could result...," unless the violator could not have known of the consequences." (emphasis added). However, rather than developing a

---

(1) The ACAH Director recently established a policy stating that three de minimis violations involving similar situations or circumstances and occurring within the past three years, constitute a nonserious violation. However, because this policy is not established in an administrative rule, the Commission could be challenged if a licensee were to receive a nonserious violation for repeated de minimis violations.

nonexclusive list, ACAH promulgated a rule that appears to narrowly define a serious violation:

> "...the exposure of an individual to a highly toxic or restricted use pesticide in a concentration that causes acute oral or dermal or inhalation toxicity unless the individual is participating in the pesticide application and is wearing the protective clothing and equipment as required by the pesticide label."

Under this rule, to be considered a serious violation, the violation would have to meet all of the conditions defined (i.e., a person must actually be exposed to a highly toxic or restricted-use pesticide in a toxic concentration and have an acute reaction to it) to be considered a serious violation. Otherwise, a violation -- no matter how serious the actual or potential consequences -- must be cited as a nonserious violation.

The rule should be written to list several serious violations. There are at least two specific acts that should probably be considered serious violations:

- **Spraying someone** - It is possible that a person sprayed with a pesticide other than a highly toxic or restricted-use pesticide (as currently required by the rule), could suffer a "substantial probability that death or serious physical harm could result," depending on the person's sensitivity.

- **Dumping** - Dumping some pesticides or pesticide containers may be a serious violation because it may produce a "substantial probability that death or serious physical harm could result." The **dumping** rather than the exposure would be the serious violation. The dumping of highly toxic pesticides is not included in the list of serious violations under the rule, unless a person comes in contact with the dumped pesticides. And, even then, exposure is not enough to make the dumping a serious violation unless accompanied by acute oral or dermal or inhalation toxicity. This is a limitation on what appears to be a serious violation, and is inconsistent with the statutory definition.

Some violations noted in the rules may need reclassification - Finally, some of the nonserious violations currently listed in the rules may need to be reclassified as serious violations. There may be some violations on the nonserious list that could fall within the statutory definitions of a serious violation. In addition, there may be some violations that

could be classified as both serious and nonserious. The application of either rule to a particular act would depend on whether someone was harmed, the kind of pesticide involved, etc. For example, dumping could be considered both a serious and a nonserious violation.

RECOMMENDATIONS

1. ACAH should provide more effective enforcement through the point/penalty rule (R3-10-506) by revising the use of points to allow for fines and/or penalties sooner. All violations within the last three years should also be included in the total point calculations.

2. ACAH should rewrite Administrative Rule R3-10-501 to comply with the statute, and provide a nonexclusive list of acts that are considered serious violations.

3. ACAH should expand Administrative Rules R3-10-501 through 503 to provide a more comprehensive list of acts that constitute serious, nonserious, and de minimis violations. The Commission should also consider placing certain violations on more than one list (i.e., serious and nonserious), so that the act is appropriately categorized according to the situation at the time of the violation.

Arizona Commission of
Agriculture and Horticulture
1688 WEST ADAMS • PHOENIX, ARIZONA 85007 • (602) 542-4373

FIELD SERVICES

District Offices
Fruit & Vegetable Standardization
Market News

OFFICE OF THE DIRECTOR

Office of the State Chemist
State Agricultural Laboratory
Agricultural Chemicals and
Environmental Services Division

November 29, 1990

Mr. Douglas R. Norton
Auditor General
2700 North Central Ave.
Phoenix, AZ 85004

RE: Agency Response to Pesticide Regulation Draft

Dear Mr. Norton:

The agency response to the seven findings of your audit to the pesticide regulations is enclosed. Also included is the Commission response as faxed to us by Kenny Evans, Chairman.

If you have any questions, please contact me.

Respectfully,

Dr. Ivan J. Shields, Director
Commission of Agriculture
and Horticulture

IJS:tg

Enclosure

November 29, 1990

Douglas Norton
Auditor General
1700 North Central Suite 900
Phoenix, Arizona 85004

Mr. Norton:

We appreciate the opportunity to comment on items reviewed during your recent audit. The scope of your audit made completion nearly impossible in the time frame allotted. Your staff did a commendable job, considering the magnitude and nature of the work required. Audits generally focus on negatives. On complex issues, the public has a right to have the State's successes highlighted as well. Although the successes are acknowledged in your report, for balance, they ought to be highlighted just as the shortcomings are.

As Commissioners, we take the findings of the audit very seriously. We consider allegations that State employees have failed to enforce pesticide rules as a serious breach of responsibility. Although our first reaction was anger and disappointment, we have chosen to use the resources at our disposal to investigate and correct the problems identified. As you are aware, we have already asked the Attorney General to investigate and prosecute any employee who has broken the law. We have also asked the Attorney General to provide counsel about possible disciplinary action we can take against any employee who is proven to have failed to carry out the rules adopted by the Commission. We ask that allegations of malfeasance or obstruction of justice be vigorously prosecuted. We also ask that you direct

your staff to cooperate in those endeavors.

As farmers and ranchers, we want the rules enforced vigorously, but fairly. We want the farmers and applicators to be educated to **PREVENT** violations and to eliminate unnecessary pesticide use. If violations occur, we want the violators punished as per the rules. We want the "bad guys" -- those with repeated serious convictions put out of business. They must be afforded their constitutional rights, but once due process has been served we expect enforcement of the rules. Anything less is just not acceptable. If the incidents cited in the report are accurate, enforcement has not been fair or strict enough.

We concur with the audit report finding regarding drift and pesticide container disposal. Both issues pose significant legal and technical issues but they must be addressed and resolved. The Federal EPA has worked more than 5 years now on the Drift issue and still have not even come up with a definition for drift. We believe that perceived exposure poses a problem whether or not actual exposure occurred. We further believe that much of the problem resolves around being a "good neighbor." We have developed buffer Zones, PMA's and "Sensitive Areas" with that in mind. Unfortunately, we can not force someone to be a good neighbor. We would support efforts to eliminate off target exposure to drift.

The container storage and disposal issue is by far the most hazardous pesticide issue facing both the public and the industry. We strongly support efforts to provide "cradle to

grave' tracking of pesticide containers and believe a technical advisory team could develop a workable plan to minimize or eliminate improper pesticide container disposal.

The statutory division of responsibilities within the Commission between the staff (state employees who are supposed to enforce the law) and the Commissioners (public and industry representatives who adopt the rules) will cease to exist in one month (December 31, 1990). At that point, state employees under the new Director will assume all of the responsibilities in the newly formed Department of Agriculture. We believe the new Director ought to and will use the information from the audit and the subsequent information and counsel received from the Attorney General in structuring the new Department of Agriculture.

As a Commission, we spent thousands of hours developing what you, and others, acknowledge are some of the most stringent and comprehensive environmental regulations in the entire country. We studied more than 3,000 pages of technical data and pushed through some of the most significant rule changes in the State's history. We faced many obstacles in that process. Political activist pushed for more stringent rules. Industry spokesmen testified that the proposed rules were stricter than other states and would discriminate against Arizona's family farmers. The compromise reached did not give either side all that they wanted. The compromise rules finally adopted favor the environment more than industry. As you report, the rules compare

favorably to any state -- even California. They are more stringent than liberal, environmentally activist states like Massachusetts or Vermont. Adoption of the rule package represents a negotiated balance between conflicting interest groups. With the exception of a small number of technical, legal issues on which we received conflicting legal counsel, the rules carry out legislative intent. In the highly charged emotional climate that surrounds environmental issues, we are the only agency to have completed that monumental rule making task. During the period of transition we experienced the following transitional conditions:

PERIODS IN WHICH WE WERE TRYING TO ENFORCE RULES:

1) Based on: PRIOR LAW with PRIOR RULES & REGULATIONS
2) Based on: SOME NEW LAWS BUT MOST OLD RULES
3) Based on: NEW LAW, SOME NEW RULES & SOME OLD RULES
4) Based on: NEW LAW, MOST NEW RULES & SOME OLD RULES
5) Based on: NEW LAW and ALL NEW RULES

Obviously, this transition created periods of confusion. Some of the incidents cited in the audit report show that even the audit staff, after months of study, misinterpreted which rules were in effect at which times. Application of rule in each time frame was based on counsel received from the Attorney General's representative. It is not valid to criticize the agency for failing to enforce a rule if the rule or procedure was not even adopted until after the incident occurred. We have made great strides in getting the rules and regulations in place. We

have struggled to train and re-train and cross-train the staff. We have spent significant time and resources educating, training and certifying the farmers, pest control advisers, sellers and others who handle ag chemicals. In fact, other states have even patterned their programs on our successes. We are, therefore, extremely disappointed to learn of your allegations that the Director and his staff, who are given the **statutory** responsibility by the legislature to enforce the law and rules, have been "reluctant" so to do. As discussed above, the staff performance is being addressed by the Attorney General. The rules are not the problem, enforcement may have been.

Many of the topics discussed in the audit are emotionally charged, highly technical issues about which some of the best experts in the world disagree. On some of these issues, the brevity which was required in preparing the document only allowed your staff to include generalizations or judgmental comments. Some points are of such significance that they require a more in depth response. As an example, IPM is a simple acronym used to describe a very general concept. Some aspects of the concept are well understood, easily documented and widely used. Other aspects are highly technical, undocumented and often speculatively at best. In Arizona, the principles of Integrated Pest Management are more widely accepted and used than in most any other state. We applaud the efforts of the staff person who focused on this issue. We concur that more can and should be

done to develop additional IPM practices that Arizona farmers can use. Adding additional taxes on the farmer to do this is not the correct approach. California currently spends millions annually trying to find new IPM techniques. Any techniques developed by them will be readily adopted and used by Arizona farmers as well. Arizona's farmers, **through self imposed taxes**, already spend 12 times more than State Government on IPM in an attempt to reduce the amount of agricultural chemicals we must use. Everyone benefits from those expenditures. The need is for a more **BALANCED BASE** of financial support. Though we are a model for other states to emulate, more can be done. Unfortunately, some of our best tools -- ie. quarantines and inspection stations -- meet stiff public resistance. The key is education, not money. Emphasis should be placed on all aspects and options for pest control including, but not limited to, safe pesticide use and worker safety training.

Some of the enforcement issues are complex from both a legal and technical standpoint. On some issues, the State and Federal regulations have changed -- sometimes more than once -- during the period reviewed. Issues such as 1) constitutional presumption of innocence vs. rules of evidence, 2) conflicting primacy on Federal and State FIFRA, CERCLA, CWA and OSHA Regulations -- ie. which agency does what. 3) an individual's constitutional rights against double jeopardy -- ie. allowing the agency with the stiffest penalty structure to take the lead

in prosecuting serious offenses, 4) the right to know vs. historic property rights issues, 5) how to proceed when we receive conflicting legal counsel, etc. It is understandable, therefore, how some of the rules or events were misunderstood or misinterpreted by the auditors in the legislatively imposed rush to complete the audit. For instance, through out the document, staffers equate the issuance of a citation with a finding of guilt (ie. see pages 24-26). An individual is innocent until **PROVEN** guilty. The issuance of a citation was intended to be a charge that the person **MAY** have violated a rule. The receipt of a complaint was to be handled as a **POTENTIAL** violation -- or a request for information depending upon the circumstance. With that in mind, for several years, we actively encouraged people to call ACAH whenever they had a concern, whether it involved an incident or not. We discussed and announced this through television and the other media in an effort to get people to call in so we could discuss their concerns. We even went so far as to print up wallet size cards with our phone number and general safety information. We assumed that educating the public and allaying unnecessary fears was a part of our mission. Obviously, encouraging the public to call backfired on us. First, additional calls were misinterpreted as meaning more problems existed. Secondly, staff persons who become over zealous in trying to allay public fears may cross the line and become "reluctant" to investigate potential violations. Even the process initiated may create that perception of reluctance or

"cover-up" whether or not it is true.

In another classic example of the confusing and complex nature of the rules, the auditor's analysis of the point system failed to identify that the points are cumulative both within and across categories. This results in a gross under estimation of the number of points assignable with a given violation. In the example used, the auditor misstated that a pesticide user who killed an endangered bird would receive the same point penalty as one who killed a sparrow. The point system actually allows double the point penalty quoted -- 1-10 points under 2.d. (nontarget bird kills.) **PLUS** 1-10 more under 2.i. (killing one ... endangered species). Additionally, he could receive up to 30 additional points if he contaminated water, soil and caused property damage in the same incident. Additional points assigned under sections 3, 4, 5, and 6 could bring the total up to 135 points -- well over the amount needed to levy the maximum fine and penalty. The points are cumulative not singular. Additionally, the violator is subject to Federal Civil and Criminal Prosecution as well. The rules are adequate -- provided enforcement is fair but strict. That may not have been the case.

Funding for pesticide enforcement continues to be a problem. The DOA grade classifications discriminate against ACAH pesticide inspectors. Once trained and qualified, pesticide inspectors and chemists can get jobs at ADEQ or other sister agencies at an average 1-3 grade levels higher than with the Commission. This

adds to high turn over rates, increases training costs and lowers staff moral. The Public currently places a great deal of emphasis on environmental issues, including pesticides. They expect the State's pesticide inspectors to be at least equally competent with other state employees. Fairness would indicate a review in this area is warranted.

The State Ag Lab and State Chemist have been housed in a facility that could not even be certified if it were a private laboratory. For more that four years we have fought with DOA about getting moved to a modern facility. Although that will be accomplished in the near future, the results of being forced to work in a substandard facility are reflected in tardy reporting as documented in your report. Staff did a credible job considering the difficult surroundings.

In summary, trying to measure the success of pesticide enforcement is difficult. The process is made even more difficult when:

1) dramatic changes in the rules occur during the audit period

2) public awareness and sensitivity to the issues increase markedly, as evidenced by significant increases in complaints and incidents in other states.

3) the counsel received about legal issues changes in response to changing circumstances

4) the Commission of Ag and Horticulture will be replaced by the new Department of Agriculture in less than a month.

We believe that farmers and ranchers want vigorous, fair

enforcement of pesticide rules. We support efforts to eliminate all unnecessary use of agricultural chemicals. We believe that improper storage and disposal of pesticide containers continues to pose the most significant threat to both people and the environment. We encourage the appointment of a task force to develop innovative methods of solving this problem. We believe that drift is a major problem complicated by urban sprawl and poor planning and zoning. We support efforts to develop better target efficiencies and to increase the use and effectiveness of sensitive areas, Pest Management Areas and Buffer Zones.

We concur that enforcement is as much an attitude as a process. We have requested the Attorney General look into issues raised in your report. If violations of law have occurred we have requested that they be prosecuted. If, as you assert, staff has been "reluctant" to enforce the regulations we worked so hard to get into place, disciplinary action will be recommended.

Finally, we believe our rules and our results compare very favorably with other states -- when results are measured as protection of public health and the environment -- not as telephone calls. Much more can and ought to be done. The poisoning of even one child because of improper storage or disposal is a tragedy that must be eliminated. But progress must be measured by not only where we are but where we have come from. Six years ago pesticide incidents were on the front page of the newspaper at least once a week. During the early 1980's, more complaints were received in some months than we have received in

TOTAL over the last three years. Much more needs to be done but much improvement has, in fact, already occurred. With the assistance and support of the legislature and the public at large, we expect that Arizona will emerge as a model for other states. More importantly, we will be able to control pests with less chemical usage and with fewer problems for both humans and the environment.

Attached herewith is a summary response requested from the staff. It is not offered as Commission policy, neither has it been edited by the Commissioners. It is offered as perspective only.

Sincerely,

Kenny Evans,
Chairman
Arizona Commission of Agriculture & Horticulture

ARIZONA COMMISSION OF AGRICULTURE & HORTICULTURE
RESPONSES TO AUDITOR GENERAL'S REPORT

FINDING I - ACAH IS RELUCTANT TO CONDUCT THROUGH AND TIMELY INVESTIGATIONS OF PESTICIDE COMPLAINTS.

RESPONSE: The Commission accepts the Auditor General's finding, however, investigations were assigned and conducted according to established priorities and investigated in a thorough and objective manner with the evidence collected determining the outcome. The audit concedes that investigations were generally initiated within one day of receipt of the complaint. It is felt that had it not been for budget constraints, personnel shortages and demands on the inspectors' time for other required pesticide regulatory duties that the ACAH would have been able to reduce delays and initiate more investigations on its own initiative. An additional factor is that the program is relatively new and the performance audit was commenced shortly after the program began.

If full staffing had been maintained within the various program responsibilities we believe that acceptable program objectives would have been attained. Higher performance with additional better qualified personnel needs to be considered to accomplish the mandated objectives.

Possible Violations Are Not Investigated:

In the example of the 1989 incident the audit references on page 8 the concerned homeowner called to inquire as to certain specifics about an application in progress. The homeowner was concerned because the family had a history of allergies. The agency receives many calls about the use of pesticides and it may be interpreted as a concern by the receiver of the call and a complaint by the caller.

Every complaint of a non-notification of a school is investigated. However, there have been many instances in which during the preliminary investigation it was discovered that the application was outside the statutory limitations.

Staff interpretation of the incidences listed as examples on pages 9 and 10 does not agree with the interpretation by the auditors. As an example, the 1987 monitoring incident, the Division Director did not request that the monitoring form be rewritten. The inspector doing the monitoring had made a contradiction on the form and it was suggested it be corrected to remove the contradiction. The correction strengthened the ACES position of a possible violation had a complaint been

received. The staff did not feel that a complaint was necessary under the circumstances.

Investigations Appear Designed To Ignore Violations:

Under this heading the statement "Even when ACES does pursue a complaint, the manner in which investigations are conducted often appears designed to avoid identifying violations." If the percentage of cases proven to be violative is considered the preceding statement is inconsistent with that fact.

On the following page 11, two cases are offered as proof that "ACES often closes cases without thoroughly investigating the complaints."

The first case was investigated following all procedures, samples were taken, residues found, application records located, area treated identified, statements taken from complainant and a witness, and the applicator interviewed (he did elect not to give a written statement). The investigation determined that there was not a violation of buffer zone statutes. The persons writing the report may disagree with the charge made against the applicator and the resulting penalty, but for them to use this case as an example of a lack of a thorough investigation is not consistent with the point they attempt to make.

The second example is inconsistent with the case file and considerable time and effort was spent by a competent inspector and no documented evidence was found. The case was closed because no corroborating evidence supporting the complaint could be discovered after a comprehensive investigation, not because of the reason stated in the report.

Investigations not pursued without documentation of application. This statement is not consistent with policies adopted by the agency. It is true that a copy of the pesticide-use report (Form 1080) does much better document the facts of the case relating to the application and does so under the signature of the applicator. The auditors themselves reviewed a case in which an applicator did not submit a Form 1080 and the applicator was charged with a violation. In another case a Form 1080 was never found, even though spray records for both farms were reviewed by the inspector. In addition, comments were made concerning a lack of a description of the aircraft by the complainant and the results of the laboratory analysis of the sample. No mention is made that the case file contains information that the incident occurred at night and the complainant stated he could only see the lights of the aircraft or that the case file contains information that the man's

wife had washed his motorcycle prior to the samples being taken thereby making the samples useless. This case was not closed because of not having a Form 1080. It was closed because ACES could not document a violation.

Substantial Delays In Investigative Process:

It is implied that ACAH intentionally delays its investigations. As has been previously pointed out, investigations are initiated immediately. Delays that may occur are, considering available staff and workload, those that are beyond the control of the person doing the investigation.

It is the interpretation of the Attorney General's office that the clock starts at the initiation of the investigation.

Recommendations.

One recommendation is that ACAH needs to initiate more complaints on its own, not just those of third parties. Considering the amount or case work now accomplished by an extremely small staff, the only way the agency could initiate more cases is to have a larger staff of investigators, more office support, more chemists and a much larger budget. At the conclusion of the 1990 monitoring season, all ACES inspectors had accrued the maximum of 240 hours of overtime and the mileage budget was depleted.

FINDING II - ACAH HAS NOT TAKEN ADEQUATE DISCIPLINARY ACTIONS IN PESTICIDE ENFORCEMENT CASES

RESPONSE: The Commission accepts the finding of the Auditor General, however, disciplinary action was imposed according to the statute and the rules to be enforced. Early enforcement (August 13, 1986 to November, 1987) was hampered as rules had not been passed to clarify the statutes. Letters of Warning and Notices of Concern were utilized by the former agency regulating pesticides and the Attorney General's office suggested their use be retained. This advice was rescinded by a second opinion from the Attorney General's Office on November 14, 1989.

Citations negotiated were done so with the full knowledge of the Attorney General's Office. No negotiation guidelines or interpretations were made by the Attorney General's Office until November 1989. All fines were assessed pursuant to the statutes, dependent on the circumstances and no leniency was allowed.

FINDING III - MORE CAN BE DONE TO ADDRESS THE PROBLEM OF PESTICIDE DRIFT IN RESIDENTIAL AREAS.

RESPONSE: The Commission concurs and would support a statute change allowing for a greater buffer zone distance in residential areas and in some areas the application of pesticides may need to be restricted to ground powered equipment only. Studies have supported this and more emphasis needs to be placed on keeping pesticides within the target area.

With additional funding from the legislature the ACAH could sponsor studies to aid in the development of drift reduction measures.

FINDING IV - IMPROPER DISPOSAL OF PESTICIDE CONTAINERS HAS BEEN WIDESPREAD.

RESPONSE: The Commission concurs, however, the Commission feels that with additional emphasis on education and with the cooperation of the industry to design new dissolvable and returnable containers that this condition can be overcome in the future. Improper disposal of pesticide containers can best be addressed through proper education of the pesticide user.

FINDING V - CAN ARIZONA DO MORE TO REDUCE THE USE OF AGRICULTURAL PESTICIDES?

RESPONSE: We have requested and are continuing to request additional funding to support the IPM principles. Additional reduction of pesticide use is possible with additional education, research and promotion of IPM principles. However the varying weather conditions complicate the implementation of certain IPM principles.

FINDING VI - A MORE COORDINATED AND COMPREHENSIVE PESTICIDE REPORTING SYSTEM COULD BENEFIT THE STATE.

RESPONSE: The Commission concurs. We have initiated a study and are investigating a plan with the ADEQ on how to best approach the problem of gathering the required information without duplication of reporting requirements.

FINDING VII - ACAH NEEDS TO REVISE ITS RULES ESTABLISHING ENFORCEMENT PENALTIES.

RESPONSE: The Commission concurs. As we continue to refine our program, information is being gathered to strengthen the enforcement capabilities of the Commission. Under the administrative procedures act, changes cannot be accomplished until all aspects of the act are complied with; this requires nine months to a year to accomplish.

APPENDIX

R3-10-506. Point System for Administering Penalties and Fines

A. The Hearing Officer shall assess points against a violator for the violation of each pesticide rule or statute, or the director shall compute points for the violation of each pesticide rule or statute upon entering into a negotiated settlement, in accordance with the following point system. One choice shall be selected, unless other wise specified, from each of paragraphs one through six based upon supporting evidence in the record of the proceeding before the hearing officer or director. For the purposes of this rule, "exposure" means the inhalation or ingestion of, or eye or skin contact with, pesticides. Points shall be totaled for the violation of each pesticide rule or statute.

1. Health effects.	Points
a. No evidence of human exposure to pesticides.	0
b. Evidence of human exposure to pesticides but treatment not required by a physician, nurse, paramedic or physician's assistant.	5
c. Exposure to pesticides that required treatment by a physician, nurse, paramedic, or physician's assistant, but which did not result in pesticide intoxification.	6-10
d. Exposure to pesticides that required either hospitalization for less than twelve hours or treatment as an outpatient for five consecutive days or less by a physician, nurse, paramedic or physician's assistant for pesticide intoxification.	11-30
e. Exposure to pesticides that required either hospitalization for twelve hours or longer, or treatment as an outpatient for more than five consecutive days by physician, nurse, paramedic or physician's assistant for pesticide intoxification.	31-60
f. Exposure to pesticides resulting in death from pesticide intoxification.	100

2. Environmental consequences and property damage. (Select one or more as evidence indicates.)	
a. No environmental or property damage.	0
b. Water source contamination.	1-10
c. Soil contamination causing economic damage.	1-10
d. Nontarget bird kills.	1-10
e. Nontarget fish kills.	1-10
f. Nontarget kills involving game or furbearing animals as defined by A.R.S. §17-101.B	1-10
g. Any property damage (nonserious violation only pursuant to A.R.S. §3-361.4)	1-10
h. Air contamination causing official evacuation by federal, state, or local authorities.	1-10
i. Killing one or more threatened or endangered species.	1-10
j. Killing one or more domestic animals.	1-10

3. **Culpability**	Points
a. Unknowlingly, i.e., reasonably could not know or was without any knowledge of the prohibitions or restrictions which are the basis of the misconduct cited.	0
b. Knowing, i.e., knew or reasonably should have known by reasonable diligence of the prohibitions or restrictions which are the basis of the misconduct cited.	1-10
c. Willfully, i.e., actual knowledge of the prohibitions or restrictions but engages in misconduct or alternatively, intentionally, or due to unjustifiable negligence fails to be informed of prohibitions or restrictions governing cited misconduct.	20-25

4. **Prior violation or citations.** Violations or citations within three years from the date of the completion of the hearing or negotiated settlement. (Select one or more as evidence indicates.)	
a. None.	0
b. One or more prior de minimis violations.	5
c. One prior nonserious or serious violation.	10
d. One of same or substantially similar nonserious or serious violation.	20
e. Two prior nonserious or serious violations.	30
f. Two of same or substantially similar nonserious or serious violations.	40
g. Three prior nonserious or serious violations.	60
h. Three of same or substantially similar nonserious or serious violations.	70
i. Any additional same or substantially similar nonserious or serious violations (points per violation).	10

5. **The length of time a violation has been allowed to continue by the violator after notification by the Commission.**	
a. Less than one day.	
b. One day but less than one week.	0
c. One week but less than one month.	1-10
d. One month but less than two months.	11-20
e. Two months or more.	21-30
	31-40

6. **Wrongfulness of conduct.**	
a. Minimal, i.e., conduct resulting in a violation that does not cause any immediate damage to public health, safety or property.	1-5
b. Substantial, i.e., conduct resulting in a violation that the evidence establishes may or has had an immediate effect upon public health, safety or property, but such effect is less severe than that resulting from aggravated conduct.	6-10

6. **Wrongfulness of conduct.** (con't) Points

c. Aggravated, i.e., conduuct causing the substantial probability of or resulting in serious physical injury, hospitalization, or sustained medical treatment for an individual or, additionally, degrading the preexisting environmental quality of the air, water, or soil so as to cause a substantial probability of a threat to the public health, safety or property. 20-50

B. The Hearing Officer, after determing points pursuant to R3-10-506.A., shall assess a fine or penalty, or fine and penalty, for each violation in accordance with the following schedules: (For the purposes of this rule, the terms of suspension and revocation pertain to actions taken on permits, licenses or certifications pursuant to R3-10-615.)

1. **Nonserious violation as defined under A.R.S. §3-361.**

a. 53 points or less. A fine of $1 to $150; a penalty of one to three months' probation, with a condition of violating probation being one to three hours of continuing education.
b. 54 to 107 points. A fine of $151 to $300; a penalty of four to six months' probation with a condition of violating probation being one to ten days' suspension.
c. 108 points or more. A fine of $301 to $500; a penalty of seven to twelve months' probation with a condition of violating probation being fifteen days to thirty days' suspension of or revocation for a period of up to one year.

2. **Serious violation as defined under A.R.S. §3-361.**

a. 46 points or less. A fine of $1,000 to $2,000; a penalty of one to three months probation with a condition of violating probation being five to ten days' suspension for a nonserious violation or fifteen to thirty days' suspension for a serious violation.
b. 47 to 93 points. A fine of $2,001 to $5,000; a penalty of four to six months probation with a condition of violating probation being fifteen to thirty days' suspension for a nonserious violation and thirty-one to ninety days' suspension for a serious violation.
c. 94 points or more. A fine of $5,001 to $10,000; a penalty of probation for seven to twelve months with a condition of violating probation being two to four months' suspension for a nonserious violation and four to twelve months suspension for a serious violation, or revocation for the remainder of the license year and an additional period of one to three years.

3. **A de minimins violation shall not be considered a violation of probation.**