Pesticide Bureau

1993 Annual Report

Division of Regulatory Services

Department of Food and Agriculture

Executive Office of Environmental Affairs

JONATHAN L. HEALY
Commissioner

TRUDY COXE
Secretary

Introduction

The Department of Food and Agriculture is the state lead agency for pesticide regulation in Massachusetts. The Department operates under the authority of Massachusetts Pesticide Control Act (M.G.L. Chapter 132B). The implementation of the Act is carried out through the Pesticide regulations (333 CMR).

The following is a summary of the activities of the various programs operated within the Pesticide Bureau. The Bureau has also prepared a document which summarizes the entire scope of regulatory programs and controls on pesticides. This document "Pesticide Guidebook: Regulation, Registration and Resource Directory" is available by writing to the Pesticide Bureau, Department of Food and Agriculture, 100 Cambridge Street, Boston, MA 02202.

♦ This information available in alternate format upon request ♦

Table of Contents

recycled paper

Publication No. 17517 - 50 - 125 - 3/94 - .82 - C. R.
Approved by: Philmore Anderson III, State Purchasing Agent

Enforcement

As in past years, the Enforcement Section continues to conduct education outreach programs to the pesticide using community regarding laws and regulations. These lectures have been sponsored by Co-operative Extension, various industry associations and individually by pest control companies.

In order to improve case tracking, an EPA developed computer program designed to track enforcement cases and assist in quarterly and year end summaries is currently being used.

Investigating complaints remains a priority activity. The Enforcement Section continues to conduct routine inspections of pesticide user establishments, pesticide producer establishments and marketplaces. Worker Protection Standard outreach to the agricultural community has been conducted this year, with information regarding the standards discussed with and supplied to 29 facilities.

Inspections

Agricultural Follow-up	11
Agricultural Use Observations	29
Non Agricultural Follow-up	5
Non Agricultural Use Observations	56
Import Inspections	0
Certified Applicator Records	42
Marketplace Inspections	38
Notice Of Aerial Applications Of Pesticides	19
Permits For Aerial Application Of Pesticides	3
Producing Establishment Inspections	28
Restricted Use Pesticide Dealer Inspections	30
Samples To MPAL	153

Enforcement Actions

The Department instituted a civil suit against a national pest control company regarding unlicensed pesticide applications.

Civil Court	1
Warnings	19
Administrative Orders	32
Distribution of unregistered pesticide	14

Operate in careful manner	2
Request for records	0
Unlicensed use	6
Use inconsistent w/label,	5
Use of unregistered pesticide	2
Purchase of unregistered pesticide	5
Records violation	1
Falsification of records	1
Application within 10 ft wetlands	1
Improper method	2
Submit plan	1
Zone II groundwater	2
Use of restricted pesticide w/cert.	2
Distribution restricted pest uncert. applicator	1

Training and Meetings Attended

Enforcement staff attended a training session in Texas on the new Worker Protection Standard. In addition, the Chief Inspector has been working with EPA/OCM on reviewing a new national manual for beginning inspectors.

All Inspectors attended a training week conducted for all New England pesticide program Inspectors, sponsored by EPA Region I.

In FY 93, a Supervising Inspector received certificates of completion of training as a result of attending a CLEAR session. During this session the Inspector was a guest lecturer.

Awards

Two certificates were awarded to the Inspector responsible for this ROW program, one from the University of Missouri for Law Enforcement Completion coursework, and one from CLEAR, Council of State Governments for completion of the Investigator NCIT, National Certified Investigator Training and testing.

Certification and Training

Clearly, 1993 has been a year where "change" was the bottomline for the pesticide certification and licensing program. The important initiative of upgrading the pesticide certification and licensing program has come to closure with the approval of new certification and licensing regulations (effective January 1, 1994). Although several years have past since these changes were first proposed, the adoption of these changes compliment our continued efforts to improve and strengthen the program. In addition, another change took place when the state pesticide control act (referenced as Chapter 132B of M.G.L.) was amended to require pesticide licensing of individuals who use pesticides in areas such as condominiums, school grounds, and apartments. Finally, new regulations were approved that regulate the use of pesticides indoors affecting all of the certified and licensed pest control operators who use pesticides indoors in the Commonwealth.

These "changes" reflect a regulatory commitment to assure to the public that at the very least those individuals using pesticides especially in areas previously unregulated have a minimum competency regarding the use of pesticides.

One of the principal ways of verifying competency is through the administration of written examinations. A number of state examinations are given on an annual basis allowing these individuals ample opportunity to comply with these changes.

State exams given during 1993	2,537
Core Exams	1,236
Certification	1,269
Dealer	32
Total 1993 credentials issued	5,764
Private Certifications issued	1,562
Commercial Certifications issued	2,756
Commercial Applicator Licenses issued	1,313
Dealer Licenses issued	133
Total 1993 Renewals sent out	5,750

As seen above, a total of 5,750 pesticide renewal applications were mailed out. Of the 5,750 mailed out, 4,930 individuals renewed their pesticide certification and/or licenses for 1993. This represents a compliance rate of approximately 86%. This percentage is a bit better than what was reported for 1992 being 83.5%. During the last three years, the average number of individuals renewing their pesticide certification or license is about 86%!

Due to the new changes that will be effective January 1, 1994, much of our efforts have been devoted to an initial upgrading of both state exams and training materials. This gigantic task

will not happen all at the same time. However, new test generation computer software is making this process a bit easier. During 1993, we have created item banks for each state exam and will utilize the software as we develop each exam for the upcoming new year schedule. The exams administered during the upcoming year will be closed book and only a single uniform exam for a particular type of credential. Also, we are working with the State Cooperative Extension Service to phase in new study materials which will allow for final revision of state examinations.

A lot of effort took place in the development of a new exam and license information package that provides the exam candidates with pertinent information of taking exams and obtaining a pesticide license. This package includes application to take the exam(s), order form to purchase self-study materials, exam schedule, resume form to verify experience, and other relevant information.

Individuals who develop products to control pests are subject to regulation under several Federal laws. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires that before any person in any state or foreign country can sell or distribute any pesticide in the United States, they must obtain a registration or license from the U.S. EPA. The term "**pesticide**" meaning any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest, and any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant.

It is important to note that the definition for a pesticide does not make any reference to the level or kind of toxicity that a product may present in order to be considered a pesticide. Therefore, toxicity is taken into consideration by EPA when it requires supporting information i.e. data and when it determines if a product can be registered, and if so what limitations will be placed on it before it can be registered. Products that have very minimal toxicity such as garlic, red pepper, eucalyptus, mustard, citric acid, soap, menthol and cedar wood have been required to be registered.

In Massachusetts any person who has obtained a registration from the EPA must then apply for a registration with the State. The registrant or an agent acting on behalf of the registrant, is required to submit an "Application for New Pesticide Product Registration", a Material Safety Data Sheet, a product label as well a $100.00 dollar fee.

New pesticide products are registered generally on a monthly basis. The technical staffs from the Pesticide Bureau and the Department of Public Health work jointly to conduct a thorough review of every product application. Once the review has been completed, the applications are brought to the Pesticide Board Subcommittee for consideration. If the Subcommittee is not satisfied that each product does not pose an adverse risk to man or the environment when used according to label directions, than the product registration is tabled until additional supporting data is obtained.

A registration is valid from a period beginning with the actual date that the Subcommittee approves it and ending on the next June 30th. Each registration must be renewed annually no later than July 1. The cost of renewing a registration is $100.00 dollars per each different EPA registration number.

Special Local Needs Registration (SLN)

When a special local problem exists that can only be mitigated through the use of a particular chemical that is not federally registered for that particular use, that chemical's use is regulated through the issuance of a Special Local Needs registration. Currently there are 8 active SLN registrations in Massachusetts (see Appendix A).

Experimental Use Permits (EUP)

An experimental use permit is required to control potential hazards of pesticide experimentation under out-of-door, greenhouse and domestic animal trial conditions. EUPs are effective for a specific time period depending upon the requirements of the testing program submitted, but shall not exceed one year. At this time there are no active EUPs in the State.

Subcommittee Action Highlights

State Individual Reviews

An individual review is any review for re-consideration of an existing registration (change of use classification, suspension, revocation or other limitation) or any review conducted for a new registration application which raises concern for unreasonable effects on man or the environment. What follows are examples of reviews that were initiated by members of the Pesticide Board Subcommittee.

DEET

On July 29, 1992 the Pesticide Bureau Subcommittee voted to initiate a State Individual Review of all registered DEET containing products. DEET is the active ingredient in most insect repellents used for personal protection. Concerns with DEET arose due to reports that the use of DEET products had been associated with encephalopathic reactions in children.

The Pesticide Bureau sent a Data Call-In notice to all companies with DEET products registered in Massachusetts. A Data-Call-In is a notice requiring the submission of pertinent scientific information. The DEET Joint Venture, an industry consortium, supplied toxicology studies required for EPA registration. The DEET Joint Venture also supplied the results of a product use survey. Several manufacturers supplied efficacy data specific to certain products.

Pesticide Bureau staff completed and presented the Individual Review to the Pesticide Board Subcommittee at the May 19, 1993 Subcommittee meeting. Staff outlined the information contained in the report which revealed that adverse reactions to DEET are rare and are possibly related to sensitive subpopulations of users and/or product overuse. There was no apparent correlation between adverse reactions and product concentration. The use of products with high concentrations were not more likely to cause a reaction than products with lower concentrations. Information gleaned from efficacy data showed that the use of high concentration DEET products did not consistently result in a higher applied dose of active ingredient than the use of lower concentration products.

A use survey conducted by Industry revealed that children receive much higher applied doses (on a daily basis) of DEET proportionally than adults or teenagers. It was noted that this study took place before EPA's Label Improvement Program (LIP) was instituted. LIP mandated that manufacturers of DEET products include a number of statements on labels which if adhered to by the users, will decrease the likelihood of adverse health affects from possible misuse or overuse of DEET products.

No regulatory mechanism could be put in place which would effectively reduce the public's unnecessary exposure to DEET. However, because of concerns with the overuse of DEET, it was decided that cooperative efforts would be undertaken to educate the public on the proper use of DEET repellents. Materials would be produced and distributed through the Departments of Food and Agriculture, Environmental Management, and Public Health.

Mosquito Adulticides

The Pesticide Board Subcommittee voted to initiate an Individual Review of all active ingredients registered in Massachusetts for control of adult mosquitoes (adulticides). Nine active ingredients are currently registered as adulticides in Massachusetts. In an effort to move towards completion of this review, three initiatives have been undertaken:

- Pesticide Bureau staff conducted a survey of all mosquito control projects in Massachusetts. The survey queried which adulticides are used, the methods and rates of application, and the reason a particular adulticide(s) was chosen.

- Pesticide Bureau staff is in the process of conducting a phone survey regarding pesticide use in other states. All states abutting Massachusetts will be contacted as well as California and Florida. California will be included because of their stringent environmental regulations, and Florida will be questioned because of their extensive experience in mosquito control. The survey queried which adulticides are used, the methods and rates of application, and the reason a particular adulticide(s) was chosen.

- DFA and DPH staff presented a joint proposal to the subcommittee on how to proceed with the actual adulticide reviews. DFA and DPH staff will divide the chemicals for review. In keeping with a previous request of the Subcommittee, a two step process was proposed. The first step, an *Initial Review,* would consist of a brief profile of each chemical's toxicity, eco-toxicity and environmental fate. This information will then be compared with the results of the surveys. If an area of concern becomes apparent in the initial review, and the chemical is used in Massachusetts or might be used in Massachusetts, then the chemical will be subject to full review at the discretion of the subcommittee.

Part of the proposal presentation entailed a format on which the reviews will be based. Both full and initial reviews will follow the same format with full reviews being completed in much more detail. It was noted that the Subcommittee had already requested full reviews of Malathion and Resmethrin since these are the adulticides most widely used in Massachusetts. DFA and DPH are currently conducting these reviews.

New Pesticide Active Ingredients

Metarhizium anisopliae (strain ESF 1)

On July 21, 1993, the Pesticide Board Subcommittee voted to register the product; BioPath Cockroach Control Chamber, EPA registration number 64296-3. A fungus; Metarhizium anisopliae (strain ESF 1), is the active ingredient in this product. It is considered a microbial

pest control agent. This active ingredient has not been previously registered in Massachusetts.

The pesticide is contained within a chamber similar to bait stations. Roaches entering the chamber pick up spores of the fungus, which is present on an agar medium on the "ceiling" of the chamber. Roaches leaving the chamber have the potential to infect other roaches. Spores germinate on infected roaches eventually penetrating the cuticle and killing the insect.

The product is labelled for use in enclosed and semi-enclosed buildings. It is sold prepackaged in the chambers. The only likely pathway for M. anisopliae to be released into the environment is via infected roaches.

This product is registered for use in food service and processing establishments. EPA has exempted M. anisopliae (strain ESF 1 only) from all food tolerance requirements. The rationale behind the exemption is twofold: 1. Minimal contamination of food or feed is likely to occur. 2. If contamination does occur, it will not pose a significant threat to human health.

From the information available, it does not appear that the proposed use of Biopath Cockroach Chamber will pose significant threat to man, non target organisms, or the environment. In addition, it has the potential to effectively augment and reduce the use of chemical pesticides which arguably pose greater risks.

Streptomyces griseovirdis (strain K61)

On November 17, 1993 the Pesticide Board Subcommittee voted to register two new pesticide products, marketed by AgBio Development under the trade name Mycostop. Both Mycostop products contain the dried spores and mycelium of *Streptomyces griseoviridis* (strain K61), a bacteria, as the active ingredient. One product, EPA registration number 64137-4, is labelled for use on ornamental plants in greenhouses. The other product, EPA registration number 64137-2 is labelled for use on vegetable crops in greenhouses and as a seed treatment.
S. griseoviridis (strain K61) is intended to control certain seed and soil borne fungal pathogens in plants, including those that cause wilt-disease, damping-off, root-rot and foot-rot. When in contact with moist soil, the spores germinate and begin to grow. During the growth process, antibiotic substances are excreted which inhibit the growth of competing, pathogenic fungi.

Based on available data, the use of Mycostop products do not appear to pose significant risk to man, non-target organisms, or the environment. In addition, Mycostop products offer alternatives to the use of several chemical pesticides.

Termiticide Motion Amended

On March 10, 1993, the Pesticide Board Subcommittee discussed the termiticide motion and whether it should be amended to address current termiticide issues. The first issue that the

Department of Food and Agriculture brought forward was experience requirements as a condition of sitting for certification exams. The motion that was passed in 1983 required that anyone who uses subsurface termiticides be certified. This did not allow people who are licensed to work under the direct supervision of a certified applicator. The motion required all applicators to be certified in category 43 (Termite) to use any subsurface termiticide.

The new certification licensing requirement passed in 1993, requires an applicator to have two years experience as a licensed applicator. The motion as it stood would not allow for the two year experience criteria to be met.

The second issue raised referred to the one gallon container size limitation previously included in the motion. It previously felt that only homeowners would be likely to buy termiticides packaged in containers of one gallon or less. New termiticides are active at low rates. As such, they are only packaged in smaller quantities.

The recommendation of the Department in light of the new licensing scheme, would be to amend the motion to remove the requirement that every licensed applicator be certified to apply subsurface termiticides as well as change the container size limitation.

The Subcommittee voted to amend it's policy in the following manner:

All subsurface termiticides are still classified Restricted Use. However, it is not necessary to be certified to use a subsurface termiticide. As with any other restricted use product, licensed applicators may use subsurface termiticides under the direct supervision of a certified applicator.

In addition, the Subcommittee has removed the restriction that subsurface termiticides be sold or distributed in packages of greater than one gallon.

Ground Water Protection Program Update

In the second year of the implementation of the *Protection of Ground Water Sources of Public Drinking Water Supplies from Non-Point Source Pesticide Contamination* Regulations (333 CMR 12.00), the Department received 7 applications for Pesticide Management Plans (PMP). According to the provisions of the Regulations, a PMP is required to apply any of the Potential Groundwater Contaminants within the primary recharge area (Zone II) of a public drinking water well.

The Department forwarded copies of each application including any additional materials to the Departments of Environmental Protection (DEP) and Public Health (DPH) for comment. Following a comprehensive review of the proposed PMP applications, the Department approved, with additional restrictions, 13 PMPs with the concurrence of DEP and DPH. In addition to IPM program requirements, restrictions imposed on the PMPs included: reduced application rates, irrigation limitations, banding of applications, and agreement to allow sampling at wells on site.

An assessment of regulatory compliance in 1992 and compliance monitoring initiatives for 1993 are included as Appendix B

The receipt and approval of the 7 PMPs represents a reduction as compared to the 17 applications submitted the previous year. Thirteen of those were approved for 1992. The 7 PMP applications were received from applicators who had approved plans in 1992. The reduction in the number of PMP applications is due to the fact that applications denied last year, were not re-submitted. Two previously approved applications were not re-submitted. It is significant to note that two previously approved PMP recipients chose to either plant other crops or use alternatives to the regulated pesticides. Moreover, one PMP recipient chose to use alternative pesticides following the denial of a PMP for some of this sites last year. Also, PMPs have been requested and approved for fewer pesticides and lower application rates.

A breakdown of the applications granted by crop follows:

PMPs Granted

CROP	#
Corn	5
Strawberries	2

An enforcement investigation was conducted this year relevant to the Ground Water Protection Program. The incident resulted form the application of two regulated pesticides to a parcel of land within the Zone II area of a public drinking water well in the town of Orange. The location of the parcel of land which had received the misapplication and the location of the

wellhead were measured and plotted utilizing a Global Positioning System (GPS). The case is still pending.

Program Assessment

The Bureau is currently assessing the impacts and the efficacy of the ground water protection regulations. Surveys regarding the impacts of the regulations have been developed targeting several groups including: Cooperative Extension personnel, commercial, and custom applicators. These surveys will be used to assess the economic and regulatory impacts as well as the degree of compliance with the regulations. In addition, Pesticide Bureau inspectors have visited PMP recipient and collected copies of actual use records of all pesticides applied. The general consensus is that the regulations have had less impact than previously thought and that there is good overall compliance on the part of the regulated community.

Program Developments

A new capability of the Ground Water Protection Program is the recent training of program staff in Global Position Systems (GPS) utilization. GPS is a satellite based positioning system which can identify the coordinates (latitude and longitude) of any point on the face of the earth. (This is the same system that was used by U.S. troops during the Gulf War for location and navigation purposes). Program staff will be identifying the location of the boundaries of each field which has received an approved PMP. This GPS information will be transferred to a Geographic Information System (GIS) for plotting the location of the PMP sites and public well locations. It should be noted that GIS is capable of maintaining additional information, beyond geographic location regarding these sites such as: which regulated pesticide was applied, at what application rate, what type of soil, etc. In addition, GIS is used to print custom maps distributed to Boards of Health in order to assist applicators in determining if their application sites are within a Zone II area. The GIS section of this report includes further information on the use of these technologies.

Public Drinking Water Well Sampling Program

The *Protection of Ground Water Sources of Public Drinking Water Supplies from Non-Point Source Pesticide Contamination* Regulations were designed to mitigate potential contamination of public drinking wells by regulating the use of Potential Ground Water Contaminants (PGC). The Regulations contain provisions which permit the use of PGC within the primary recharge area of public wells if an applicant obtains an approved PMP from the Department. As such, the Department initiated a public drinking water well sampling program in order to assess the efficacy of the Regulations, and to assure that public drinking water wells are not being contaminated by pesticides permitted under the PMP process.

The Department initiated the sampling program in 1991 to obtain background information on the potential impacts of previous PGC applications. The sampling program continues this year in an effort to assess the regulations, and to assure that the PMP process is not resulting in

unacceptable ground water contamination. The program has sampled public drinking water wells which have agricultural lands within their zone of contribution throughout the state.

Initially, the Department identified approximately 90 wells containing agricultural land within their primary recharge areas, or which had been suggested by DEP. Wells chosen for sampling were divided between those having interim and delineated Zone IIs based on the approximate percentage of each type of primary recharge area as compared to the total number of wells in the state. The Department sampled 83 of the 90 wells identified. There were no detections of PGCs in any public drinking water well, including wells which have had PMPs granted for the use of PGCs within their primary recharge area.

In total, the Department has sampled approximately 130 wells, which represent approximately 20% of all public drinking water wells covered by the regulations. To date there have not been any detections of any regulated pesticides.

EPA Ground Water Protection Strategy

State Pesticide Management Plans

The central goal of EPA's Pesticides and Ground-Water Strategy is to manage the normal, registered uses of pesticides in order to prevent adverse effects to human health and the environment, and to protect the integrity of the nation's ground-water resources. A principal tenet of this strategy is that as a result of the site specific nature of pesticide use and the potential for ground water contamination, the states need to take the lead role in managing agricultural chemicals.

In order to promote its role, the EPA is recommending that states develop Generic State Management Plans to manage pesticides for the prevention of ground-water contamination. Generic SMPs should address pesticide use in all geographic ares, including rural and urban ares, golf courses, and rights-of-ways. This approach permits the tailoring of pesticide management measures to meet the specific local ground water protection needs.

The Pesticide Bureau, with the assistance of the Departments of Environmental Protection and Public Health, is developing a Massachusetts Generic State Management Plan (GSMP) in order to address the requirements of the EPA's Pesticides and Ground Water Strategy, and the Department's own ground-water protection approach.

A working draft of the Generic SMP has been forward to the regional EPA office for comments. Following the completion of the first draft, copies will be distributed to Cooperative Extension System, Soil Conservation and interested industry groups for additional comments. A final draft of this Generic SMP will subsequently be prepared and distributed for public comment prior to submission to the EPA Regional Office. The Generic SMP is projected for completion by June 1994.

Rights of Way (ROW) Management

Generic Roadway Plans

In 1993 the Right-of-Ways Program expanded into several areas taking on new responsibilities and diversity. In June, all 351 Cities and Towns in Massachusetts were contacted in writing regarding the Roadway Vegetation Management Plan and Yearly Operational Plan.

Over 84 separate responses were received from cities and towns requesting more information or assistance in complying with the ROW regulations. Inspectors have visited Town Administrators and or Selectmen in 48 cities and towns to explain the regulations and the VMP and YOP processes. To date, the Department has received 5 completed Vegetation Management Plans and 3 completed Yearly Operational Plans.

After a series of meetings with Authority Heads and Directors, the Massachusetts Turnpike Authority currently is working on their Vegetation Management Plan and Yearly Operational Plan and indicated their intention to come into the program. Their use of herbicide will service, after several years of balancing mechanical control and herbicides, over 75% of their Roadways needs. Cost effectiveness and public safety were two of their motivating reasons to enter the program. With the addition of the Turnpike Authority to the Right-of-Ways Program, we will have extended the program to over an estimated 300 miles of Massachusetts Roads.

The Rights-of-Way program is currently working with the Massachusetts Highway Department in an ongoing attempt to bring the total network of State Roads into the (ROW) Rights-of-Way program. If that be the case the Right-of-Way Program will extend it's enforcement of herbicide use to well over 2500+ miles of roads and well over 20,000 acres of land in Utility Line herbicide use and many hundreds of miles in Railway herbicide Use.

Generic Yearly Operational Plans

Generic Yearly Operational Plans were completed in 1993 for the Utilities and Railroads. These generic plans are a part of the ongoing efforts to streamline and utilize any cost effective measures available. They require specific information to be addressed and minimize duplication and effort. They will be worked into operation the next several years. This program will continue it's efforts to work with both the Transportation and Utility Industries, to expedite the process and increase specific information.

Vegetation Management Plans

This year, Northeast Utility, New England Power Systems and the Massachusetts Railroad Association representing 9 railroads, submitted Vegetation Management Plans to the Department for approval.

Compliance Monitoring

In 1993, six (6) Use Observations/Inspections were conducted with AMTRAK, Central Vermont Railroad, the MBTA, the Boston and Maine, the Massachusetts Central railroad and at the AMTRAK Springfield Terminal Railway site.

Three (3) complaints along the Rights-of-Way concerning mis-use were investigated. Two (2) concerned railroads and involved the same company, and one (1) concerned the utility lines. An Administrative Order was issued to the contracted pesticide applicator for a railroad citing misuse of a pesticide. The other two investigations have not yet been resolved.

Monitoring

The Department initiated a monitoring program to assess the impacts of herbicide use on railroad rights-of-way on Cape Cod ground-water. This monitoring program was initiated in response to concerns expressed by Cape Cod residents regarding the potential for herbicides approved by the Department for use in sensitive areas to contaminate the ground-water. The citizens were particularly concerned since the soil on Cape Cod is very sandy and thereby susceptible to contamination and due to the designation of the aquifer on Cape Cod as a "sole source aquifer".

The Department contracted to have four monitoring wells installed within the ballast area of the Bay Colony Railroad line in Sandwich. Samples were collected quarterly by Department personnel from each well and analyzed for the herbicide glyphosate, the active ingredient in the product "Roundup" which was used to control vegetation, and degradation products. Samples were analyzed at the Massachusetts Pesticide Analytical Laboratory at the University of Massachusetts, Amherst, and there have not been any detectable residues in any sample taken.

Outreach and Education

As previously stated, over 48 Towns and Municipalities were visited. These visits were to inform and explain the Generic "Roadway" VMP and YOP's. In addition, effort was made to educate the Town Clerks, Board of Health and Conservation Commissions about roadside vegetation control and the regulations. This outreach initiative was instrumental in providing current information to many of the towns and municipalities.

In April a "Press Release" requesting information on private wells was mailed to newspapers, radio and television stations and cities and towns. The Rights-of-Way Program collected 32 additional "private well" locations in 21 towns statewide.

Pesticide Dealers likely to sell pesticides to cities and towns were mailed a copy of the "Sensitive Area Approved Materials" list. The majority of the Dealers were unaware that cities and towns should not use certain materials for roadway vegetation management.

Geographic Information Systems (GIS)

A GIS is a sophisticated computer system that uses "geographically referenced" information to integrate and correlate data. A good GIS system is capable of assembling, storing, manipulating, and displaying this spatial information in both a graphic and tabular format. The GIS software program used by all of the State environmental agencies, including the Department of Food and Agriculture (DFA), is ARC/INFO.

Use of GIS In The Groundwater Protection Program

In 1992, the DFA's Pesticide Bureau implemented regulations 333 CMR 12.00 entitled Protection of Groundwater Sources of Public Drinking Water Supplies from Non-Point Source Pesticide Contamination. The purpose of these Regulations is to minimize the potential, non-point source pollution of public water supplies by certain pesticides deemed to be potential groundwater contaminants. GIS continues to play an increasingly significant role in program planning and assessment activities, and is the key factor used for the effective implementation of these Regulations. These various GIS applications are described below.

Well Monitoring Activities

Once again, GIS was used for a monitoring study to evaluate the presence and extent of contamination by those pesticides identified under the Regulations as potential contaminants. This GIS application entailed identifying those public water supply wells across the State having the most agricultural lands within their wellhead protection areas (i.e., Zone IIs). As such, rather than choosing to sample random targets, this monitoring survey selected wells surrounded by agricultural landuse patterns traditionally regarded as high users of pesticides making the adjoining water supplies particularly susceptible to contamination. This GIS application selected, assembled, correlated and analyzed the information available at MassGIS to present it in a tabular format. That is, a computer-based report was printed indicating well related information, agricultural landuse type (i.e., cropland areas and/or orchards, nurseries, and cranberry bogs), and location information. (See Section on Groundwater Protection Program for other, non-GIS information on this monitoring initiative.)

Regulatory Implementation

As part of the strategy for the implementation of these Regulations, the Pesticide Bureau has relied heavily on GIS in its effort to achieve compliance from the regulated community. This implementation approach requires the identification of all those towns across the Commonwealth which contain a Zone II area, or portion thereof, within their community boundaries. GIS is used to select towns which have wellhead protection areas including communities that have no public water supplies but which, nonetheless, have partial Zone IIs in them by virtue of having an overlapping wellhead protection area from an adjacent town. This GIS application is implemented on a yearly basis to reflect any changes or updates in the well data used.

After this initial application, GIS is then used to map this information on a town basis. The maps produced are mailed to the local boards of health of each community for display purposes. Through the illustration of this visual information, applicators are then able to determine whether or not their intended application site(s) is located within one of these sensitive zones allowing them to ascertain whether they are subject to regulatory controls.

For the purposes of regulatory compliance during the **1993** calendar year 181 towns were identified as having a Zone II area based on the information available at the time. These 181 GIS town maps were mailed to the respective boards of health in January of 1993. A second set of maps was printed for the Department's internal use and for general public access. Since then, the well information used in this application has been updated by the Department of Environmental Protection (DEP). As such, the GIS applications described above have been renewed reflecting these changes for purposes of regulatory compliance during the **1994** calendar year. The total number of towns having these sensitive areas falling under regulatory protection in 1994 is 181.

Enforcement Activities

To date, the Bureau's Enforcement Program investigated one case of potential violation of the Regulations by an applicant. In support of this investigation, the Groundwater Protection Program advocated the use of Global Positioning System (GPS) technology to be linked to GIS. GPS is a satellite positioning and navigation tool developed by the US Department of Defense that provides location information anywhere in the world. GPS receivers compute a given coordinate 'position fix' based on the information transmitted by these satellites. The GPS equipment, when used with a known base station, provides data accuracies of 5 meters or less.

With the support of the DEP, including the supply of GPS equipment and trained personnel, Pesticide Bureau staff made a field visit to accurately locate the site in question and the nearby public water supply. Once this information was collected with the use of GPS, the data was downloaded for use with the Department's GIS system. The result was a map illustrating the public water supply and its wellhead protection area and the pesticide use site under investigation. The main purpose of engaging in this particular GIS/GPS initiative was twofold : to provide Enforcement staff with accurate, graphically displayed geographic information on which to base possible enforcement actions and, to establish guidelines as to how other potential enforcement cases, pertinent to the Groundwater Protection Program, may be carried out in the future. This was a one-time project completed during the month of June.

Pesticide Management Plan (PMP) Landuse Maps

Under these Regulations, pesticide applicators are entitled to apply for a Pesticide Management Plan (PMP). If approved, a PMP allows applicators to use an otherwise regulated product within a Zone II area given certain conditions stipulated by the Bureau in concurrence with the Departments of Environmental Protection and Public Health. As part of the Groundwater Program's Assessment Plan in regard to the various PMP sites, GIS maps of the eight sites in question have been developed illustrating available Zone II and agricultural landuse information. This GIS application serves to better identify and monitor these areas of concern.

As such, GIS will continue to be used for these purposes subject to the number of PMPs approved, and given any improvements of the landuse and/or well information.

PMP-Use Site Mapping Project

The Groundwater Program has initiated a field survey of all current PMP sites using GPS. The purpose of this project is to collect the most accurate, geographic information possible of those farm sites for which the DFA has approved PMPs under the Regulations. This is an important project given that the GIS landuse information available at the State level is based on 1985 data and may not adequately reflect the scope and type of agricultural landuses currently in use within these particular sites. In turn this more accurate, GPS-based information is linked to GIS to produce maps of these PMP sites which illustrate current landuse and pesticide use information for 1993. Thus, a 'graphic' database of crucial, PMP information has begun to be established serving to reference past and present pesticide regulated activities for future groundwater quality evaluation and assessment purposes.

In time, the Pesticide Bureau plans to expand this project to include other pesticide-use sites across the State. The goal is for the Bureau to create its own Zone II, 'pesticide' landuse GIS datalayer, i.e., 'coverage', so as to manage and implement the Department's Groundwater Protection Program with the most accurate information possible.

State-wide Contingency Map

In an effort to readily maintain information for use in the different facets of the Groundwater Protection Program, GIS is being applied for possible risk-assessment activities. This GIS application involved developing a state-wide map illustrating population density within Massachusetts communities and those public water supply wells protected under the Regulations. Specifically, this map serves to illustrate the relative impact of a potential well contamination incident on a given community based on population levels.

It should be emphasized that this GIS application does not aim to provide a direct correlation between a given well and a town's population, i.e., no one public water system necessarily provides water to all residents. Nevertheless, a general assessment may be interpreted from the information provided, including comparisons amongst Massachusetts communities relative to the number of wells and population levels. Furthermore, this information may be accounted for in other related projects such as well monitoring/sampling plans, e.g., targeting those wells found within highly populated communities, as well as other enforcement related contingency planning activities. This GIS application has the potential of providing valuable information for use during critical situations calling for prompt decision-making.

Use of GIS in The Federal Endangered Species Program

In order to comply with the Federal Endangered Species Act as it relates to pesticides, the US Environmental Protection Agency (EPA) is developing an Endangered Species Protection Program. To date, this Program is implemented on a voluntary basis. To this end, the EPA

encourages state-initiated plans that account for local conditions. (For more information on the Pesticide Bureau's approach in support of this federal Program, refer to the Endangered Species Program section.)

The Pesticide Bureau plans to use GIS to the fullest in support of this federal Program through education and information dissemination efforts. To this end, the Bureau has initiated and maintained a close working relation with the State's Natural Heritage & Endangered Species Program (NHESP) which maintains information on endangered species and their habitats on a GIS. In response to the Bureau's request for information on federally listed species, the NHESP developed a statewide map illustrating the species of concern and a matrix of occurrences on a county basis. In turn, this sample map was presented to the EPA Regional Office to demonstrate the type of information available at the State level which may be used in support of this federal Program.

A second county map showing more specific habitat areas pertaining to wetlands species was also submitted to the EPA for discussion purposes in an effort to identify the best means by which to disseminate this information accounting for data sensitivity concerns.

Additionally, GIS-based maps will be used in support of other informational and educational tools developed by the Pesticide Bureau such as species **fact sheets** and informational **brochures**.

GIS Conferences and Presentations

Alongside the interest and growth in GIS technologies the demand for GIS related information exchanges amongst users, likewise, has grown. This exchange has taken the form of a variety of annual GIS conferences. This type of forum provides one of the most appropriate means by which to concentrate the available, yet limited, sources of user expertise in order to keep pace with software enhancements and the myriad of possible GIS applications.
The Pesticide Bureau dedicated federal funds to offer its Environmental/GIS Analyst the opportunity to attend two such conferences during 1993 : the regional Northeast User Group Conference in Vermont, and the international Environmental Research Systems Institute's (ESRI) Thirteenth Annual User Conference in California. (ESRI is the company responsible for the development of the leading GIS software product - **ARC/INFO**.) In regard to the latter, it should be noted that the Bureau's Environmental/GIS Analyst attended this meeting in order to deliver a paper on the use of GIS in the development and implementation of the Department's groundwater protection regulations. This same presentation was given on two other occasions at the request of the State's EOEA/MassGIS office, and the Water Resources Research Center at UMass, Amherst.

Endangered Species

Background

In 1973, Congress passed the Endangered Species Act (ESA) "...to provide protection for animal and plant species that are threatened or endangered of becoming extinct, and to conserve the ecosystems upon which they depend." Under the Act, all federal agencies must ensure that "... any action authorized, funded, or carried out by the agency will not be likely to jeopardize ... a listed species..." This duty extends to the registration of pesticides by the Environmental Protection Agency (EPA).

In an effort to comply with this federal mandate, the EPA is in the process of developing an Endangered Species Protection Program. For the purposes of an effective implementation process, the Program uses a pesticide product labeling/bulletin approach aimed at protecting a listed species without creating unnecessary burden on the agricultural community and other pesticide users.

At this time, the EPA encourages voluntary measures to protect federally listed species during the interim period prior to regulatory implementation of the Program. To this end, the EPA encourages, in fact, **urges** states to develop State Initiated Plans. According to the EPA, the Agency "...intends to rely heavily on the results of the variety of State-initiated plans, special pilot projects and implementation strategies. The results of these projects, along with public comments on the proposed program will identify the reasonable and prudent means to implement the final program.".

State Initiatives

With this in mind, the Pesticide Bureau plans to support this federal program through an information dissemination/education approach in an effort to provide a better understanding of the issues involved and enhance compliance with the Act. This approach will take full advantage of the Department's Geographic Information System (See 'GIS Section' for more specific information on the use of GIS and endangered species protection efforts). To this end, the Bureau's Environmental/GIS Analyst met with the Regional EPA Office to discuss the components of Massachusetts' State-initiated plan, currently under a draft stage. Specifically, the GIS component of this approach would entail disseminating town-based maps illustrating the location of a listed species so that pesticide applicators are able to account for these sensitive areas, i.e., habitats, prior to pesticide applications.

In addition, the Bureau plans to disseminate general information brochures on the various issues involving endangered species and pesticides. Three brochures have been written and are pending review by the EPA Office prior to their publication and distribution. Another educational tool which the Bureau intends to work on involves the development of 'fact sheets' on those federally listed species **specifically** vulnerable to certain pesticides. Similarly, fact sheets on listed species <u>not</u> vulnerable to pesticides may also be developed in order to demonstrate to applicators that the purpose of the Program is not to overregulate, but rather, to target those species at risk from pesticides. In an effort to further this educational approach, the Bureau will work closely

with the UMass Cooperative Extension System to provide additional workshops on this subject matter to pesticide applicators through the present licensing/certification program framework.

It should be noted, that the implementation of this three part initiative involving GIS maps, brochures and fact sheets, is subject to EPA approval of the State-initiated plan proposal and the ensuing allocation of resources to these ends.

The Worker Protection Standard (WPS)

The Environmental Protection Agency (EPA) has designated the Massachusetts Department of Food and Agriculture as the State Lead Agency (SLA) responsible for the implementation the Worker Protection Standard 40 CFR Part 170 which was signed into law on August 13, 1992. This Federal regulation referred to as WPS is designed to reduce the risks of illness or injury resulting from workers' and handlers' occupational exposures to pesticides used in the production of agricultural plants. It requires workplace practices intended to reduce or eliminate exposure to pesticides.

The EPA requested that the SLA produce a State plan, "The Worker Protection Implementation Strategy" addressing how implementation would be accomplished. This document includes 3 distinct sections which are described below:

1 Outreach and Communication

The goal in 1993 was to reach as many people as possible and inform them of the WPS and what was required under Federal law. Through different mechanisms we were fortunate to be able to interact with members of the agricultural community some of which we regulate under different regulations. These individuals include but are not limited to private, commercial, certified applicators as well pesticide dealers.

Establishing and maintaining a communication network was important to program development and for this reason the "State Profile" was created. This document lists organizations and associations which represent or have working relationships with the agricultural community. Maintenance of the State Profile and outreach efforts will be ongoing.

The Pesticide Bureau staff is using a variety of means and mechanisms to disseminate information to the regulated industries. Where appropriate, this information will be shared with participating agencies and other interested groups in the following manner:

Mailing List - Bureau staff developed the brochure; "An Introduction to the Rule". This brochure includes a return request for additional WPS information as well as to have the name of each recipient added to the WPS mailing list.

Fact Sheets - Bureau staff produced two fact sheets: "Summary of the Worker Protection Standard" and "Pesticide Labeling Changes" These fact sheets were intended to summarize 40 CFR parts 170 and 156.

EPA Region 1 Workshops - On February 18, 1993, EPA in Region 1 hosted 2 WPS workshops (Springfield, MA and Augusta, ME). These meetings served the attendees as an introduction to the Worker Protection Standard as well as allowed the audience to ask questions. In attendance were associations and organizations representing various commodity groups.

WPS Survey - The purpose of this survey was to find out: 1. the specific needs of the agricultural community who will be impacted by the WPS 2. where the SLA should place some of it's efforts.

2 Training

The focus for 1994 will be to train individuals and to help prepare them to train workers and handlers in pesticide safety. The DFA is working with staff from the University of Massachusetts, Cooperative Extension Service on WPS Train-the-Trainer workshops.

EPA has developed national training and educational materials and guidance documents that will meet the requirements of the WPS training. The DFA has used Federal funds to purchase these materials and make them available to the public.

3 Compliance Monitoring Strategy

Compliance with the Worker Protection Standard will be enforced by means of inspections conducted at producer establishments, distributors, dealers, retailers, and users of agricultural pesticides.

During routine inspections, inspectors have been notifying employers and discussing the provisions of the WPS. Inspectors have also been discussing impending programs being developed to help the regulated community meet the requirements of the Standard.

Conferences and Workshops

July 1993 East Lansing, Michigan
Worker Protection Standard - Implementing Plans Pesticide Regulatory Education Program (PREP) Course

One of the main objectives of this course was to prepare the States for the next phase of WPS implementation. What follows are briefs that explain some of the issues that were pending/ongoing during the time this course took place.

Pesticide Registration (PR) Notice

On April 20, 1993, EPA issued the pesticide registration (PR) notice to registrants of agricultural pesticide products. Issuance of this notice begins the process of modifying pesticide product labels to meet the new WPS requirements. Over 7,000 agricultural product labels will be revised. The revised labels will include 1. specific WPS requirements which are detailed on the product label and 2. a statement referencing the WPS and requiring product users to comply with the WPS general provisions.

The general provisions, which are referenced but not stated on the product label are described fully in the WPS itself and in the "How to Comply Manual". When products with WPS modified labels are used in the production of agricultural plants, users must comply immediately with label specific requirements concerning personal protective equipment, treated area restricted entry intervals and notice about pesticide applications.

Pesticide Safety Training Handbook for Agricultural Workers

The handbook covers all of the WPS safety training requirements for agricultural workers. The text is written in English and Spanish with artwork used in each page to convey and reinforce the text messages.

The Flipchart

An English/Spanish flipchart to be used by trainers conducting farmworker training can be used along with the above mentioned handbook for agricultural workers.

Pesticide Safety Training for Pesticide Handlers

The EPA, in conjunction with the USDA Extension Service, has produced a safety training handbook for handlers.

WPS Safety Poster

The safety poster that must be displayed on agricultural establishments at a central location has undergone field testing and is available. The poster is colorful and presents the required messages using drawings and English/Spanish text.

WPS Field Warning Sign

The WPS field warning sign which is used to notify employees of pesticide applications is complete and available from agricultural supply houses and other printing sources.

WPS Training Verification System

EPA is working to define a system to verify that agricultural workers and pesticide handlers have received the required WPS safety training. The system will specify the contents and distribution of verification cards, the requirements for trainers who issue cards, and the requirements for workers and handlers receiving cards.

Interpretive Guidance Workgroup

EPA has established the **WPS Interpretive Guidance Workgroup** to address questions submitted to the Agency which require interpretation of the WPS. The workgroup consist of members from the EPA headquarters Office of Pesticide Programs, the Office of Compliance Monitoring, the Office of Enforcement, the Office of General Counsel, EPA regional offices and State officials. The workgroup will report its decisions to State Lead Agencies.

WPS Focus Groups

EPA has had the benefit of recommendations from a **Focus Group** on WPS Training Materials Development and a Focus Group on WPS Training Verification. These focus groups are made up of representatives from the EPA Regions, States, Cooperative Extension Service, farmworker organizations, training specialists, producers and distributors of pesticide products, growers and agricultural employer organizations. The discussions of these focus groups have surfaced practical issues and answers in the area of WPS implementation.

Pesticide Regulatory Education Program (PREP) Course
May, 1993 McAllen, Texas
EPA/Texas Department of Agriculture

The host city for this PREP course, McAllen is located in one of the most important agricultural production areas in the country, the Rio Grande Valley. Texas ranks among the top ten states in diversity and production of fresh fruits and vegetables. Additionally, a variety of grains, cotton and sugar cane are grown in this fertile area that Texans refer to as "the valley". Other parts of the state produce crops normally associated with other states such as blueberries in east Texas, and apples, peaches and grapes in central Texas. We had the opportunity to visit with farm and packing shed operations that have been complying with some worker protection aspects under Texas law.

The goal of this PREP was for the States to review the Compliance Monitoring Strategy for worker protection as well as prepare an Inspection Strategy. The goal of the Compliance Monitoring Strategy is to achieve compliance through a combination of tools to ensure that registrants, producers, distributors and users adhere to the requirements set forth in the WPS. The goal of an Inspection Strategy recommends the use of activities which should help prevent violations from occurring by providing compliance assistance as well as traditional inspection activities designed to correct and deter violations.

Field Trip/Exercises

The first field trip took us to the Texas Agricultural Experiment Station. There we introduced to several different types of personal protective equipment (PPE) and were taught how to use them properly. This exercise was done in 80 degree weather which lead to the discussion on the danger of heat stress. With the exceptions of gloves, eye and face protection, heat stress is increased by the use of all other PPE. Knowledge of the proper use of PPE to help minimize pesticide exposure, as well as not jeopardizing the health of employees working under

extreme weather conditions, requires a lot of training.

The second field trip entailed conducting a mock field inspection. The twenty four states that attended this course were separated into different groups and were assigned a different agricultural establishment for the purpose of learning to properly conduct a WPS field inspection.

The Pesticide Regulatory Education Programs attended by staff from the Pesticide Bureau posed no cost to the Commonwealth as they were both Federally funded programs.

Record Keeping

The Pesticide Use Reporting program, initiated in 1991, collected the second year of pesticide use summaries from all State licensed and certified applicators. Data submission forms and instructions were mailed to each licensed applicator in January for the 1992 calendar year. The data collected for each licensed applicator or company included: pesticide product name, EPA registration number, method of application, crop or site treated, and total use amount.

The data from the 1992 Pesticide Use Report summaries will be entered into the Pesticide Data System (PDS) as soon as it becomes operational in order to efficiently use the submitted data. (See Section on Pesticide Data System). An initial review of the submitted Reports, and during the testing of the PDS, indicates that in general most applicators are correctly completing the forms according to directions. However, problems continue with reporting of correct EPA registration numbers for product applied and also with the units in the amount used.

The Bureau will be unable to assess the degree compliance with this requirement until all the Pesticide Use Reporting forms have been entered into the PDS. Licensed applicators who have not submitted a Pesticide Use Report may be requested to provide the use data prior to issuance of a credential.

Pesticide Data System

In 1991 the Pesticide Bureau developed a plan to integrate all the computer data storage requirements of the Bureau into a unified system which is now called the Pesticide Data System (PDS). The PDS, which was developed by the Executive Office of Environmental Affairs (EOEA) Data Center, is accessed through the LAN network and provides access to the resident data to the entire Pesticide Bureau.

The primary components of the PDS include: the Dealers' Restricted Use Sales Reports, Pesticide Use Report data, and Massachusetts pesticide product registration. The applicator certification program, which is also resident on the same computer platform, will share information regarding the licensing status of dealers and applicators with the PDS programs. Current plans call for the incorporation of the applicator certification program into PDS. In addition, MassGIS is also resident on the VAX platform and will able to share information with the PDS.

The complex and divergent information storage requirements of the PDS facilitated the development of the system in phases according to the complexity of data model. The least complex section, Dealers restricted Use Sales Reports, was developed first followed by the more complex Pesticide Use Report. The pesticide product registration system was the last segment to be developed due to its complexity. Currently, all section of the PDS are operational and will be placed into production within a month. However, the Pesticide Use data could not been entered into PDS until it was placed into production.

An outgrowth of the PDS is the ability to provide the Pesticide Inspectors with current applicator licensing status and pesticide product registration information. Therefore, the Department has purchased laptop computers for its Pesticide Inspectors which will have monthly updates of State licensed pesticide applicators and State registered pesticide products.

The PDS system may also interface registered pesticide use and restricted use sales data with aquifer and land use information, which currently exists on ARC/INFO, to produce a system which identifies land areas, their associated pesticide use, and an assessment of the potential impacts of pesticides on ground water and other sensitive sites. This system will also be used as part of the Massachusetts Agricultural Chemical Ground Water Protection Strategy as required by the EPA to identify potential problem areas, maintain a tracking system of controlled pesticide use in Zone IIs for the Public Well Protection Regulations (333 CMR 12.00), and to compile use data on pesticides within the Commonwealth.

Licensing and Certification

On March 3, 1993, the Massachusetts Pesticide Board approved revision and modification of the Licensing and Certification Regulations (sections 9 and 10). These changes are summarized below.

Closed Book - All exams will be closed book.

One Exam - One exam will be given for each type of license. Applicator Licenses will still require the Core exam. Certifications and Dealer licenses will require only one exam that combines the components of the core and specialty exam.

Age Requirement - Anyone taking any pesticide exam must be at least eighteen years of age as of the date of the examination.

Experience Requirement - Before becoming certified, an individual must have at least two years of work or other relevant experience. Examples of acceptable experience include work as a licensed applicator, academic studies and other relevant work experience. Relevant experience substitutions will be defined and provided with the examination applications.

The intent of the experience requirement is for individuals to work as a commercial applicator before applying for the commercial certification examination.

Contact Hours - The old system of obtaining "credits" has been changed to one of accumulating "contact hours". A contact hour will equal fifty (50) consecutive minutes of training. In addition, the number of years to obtain training has been changed from 5 years to 3 years.

Licensed Applicators and Licensed Dealers are now required to accumulate contact hours. The number of contact hours required is as follows:

Commercial Certification	12 hrs. (per category)
Private Certification	12 hrs. (per category)
Commercial Applicator License	6 hrs.
Dealer License	3 hrs.

Current recertification credits were converted into contact hours by a straight conversion (1 credit = 1 contact hour).

Obtaining Contact Hours - Contact hours will still be obtained by attending workshops, lectures and seminars. In addition, the revised regulations also allow for alternative ways to accumulate contact hours:

> Academic Courses: The course must be within the framework of a curriculum that leads to an academic degree in entomology, botany, plant pathology, agriculture, pest control, toxicology, public health or is relevant to pesticide use, or any course within that curriculum

that is necessary to an individual's professional growth and development as a pesticide applicator or handler.

Self-Study or Correspondence Course: The course should be one developed by a professional group such as an educational corporation, or professional association or university.

Teaching or Publication: Continuing education hours may be earned by teaching a particular course, seminar series, or workshop for the first time, delivering a paper or lecture, or publishing an article or book in pesticide use. A course, seminar, or book may be considered for up to 9 continuing education hours; a published article may be considered the equivalent of up to 5 hours; and a lecture or paper may be considered the equivalent of up to 3 hours.

Degree Programs Certified or non-certified applicators taking courses for the purpose of obtaining a baccalaureate or higher degree in the biological sciences will be considered to have met the continuing education requirements specified in this section provided such courses equal at least the required number of hours. Other academic degree programs may qualify at the discretion of the Department.

Failing an Exam - After failing an exam, an applicant may apply for the next available date for re-taking that exam. An applicant who fails any exam twice must wait three (3) months before applying for that exam. If an exam candidate fails any exam three times, the candidate will be required to wait one (1) year before applying for it again.

Record Keeping - Pesticide Dealers only!- The record keeping requirement for the signature of the purchaser or his agent has been changed to the signature of purchaser and his agent. If a certified applicator sends someone else to purchase restricted use pesticides on his or her behalf, the Dealer must obtain the certified applicator's signature as well.

Regulations Relative to the Commercial Application of Pesticides to Indoor Settings (333 CMR 13.10)

On June 2, 1993, the Massachusetts Pesticide Board approved regulations Relative to the Commercial Application of Pesticides to Indoor Settings (333 CMR 13.10).

KEY COMPONENTS OF THE REGULATION

- Education through Consumer Information Sheets and notification forms addressed to three groups:

  a) persons who contracted for or directly requested treatment to their dwelling;
  b) non-contracting occupants of dwellings to be treated which will also serve as pre-

notification, and;

c) contracting entities of public buildings.

- ♦ People will be able to take steps to minimize exposure:
  - every occupant of a dwelling to be treated will be pre-notified and educated.
  - people will have the right to be pre-notified before applications to public buildings.
  - people entering areas being treated in public buildings will be alerted to the activity.
  - people will have the right to access information about pesticide applications to multi-unit dwellings and public buildings.

- ♦ Rodenticide bait stations must be labeled and the contracting entity and residents must be told the locations where the bait stations are placed.

- ♦ Through the notification process, people will be made aware of the use of rodenticide bait stations. Persons will have the right to request from applicators areas where bait stations where placed.

- ♦ Indoor landscaping pesticide applications are not subject to the regulations.

Section 13 Standards For Application

Section 10 was titled "Certification and Licensing of Pesticide Applicators". However, it contained subsections that do not directly pertain to the process of licensing or certifying applicators. Consequently section 10 has been reorganized by removing 10.03, General Provisions and making a new section 13 in 333 CMR titled "Standards for Application". This leaves only certification and licensing procedures in section 10. No significant changes have been made to the subsections moved from section 10 to section 13 except those needed for good organization of the material. The word "applicator" has been changed to "person" for consistency.

Statutory Change

A recent change to the Massachusetts Pesticide Control Act by the state legislature will now require that all applicators of pesticides in public and private places used for human habitation be licensed or certified. Residential properties with three or less apartments are exempt from this requirement.

The types of workers that must now be licensed to apply pesticides include but is not limited to landlords, apartment building maintenance staff, office building grounds keepers, golf course superintendents, the staff or janitors of restaurants, schools, town halls, etc. Apartment and condominium maintenance personnel may not spray pesticides in an apartment for ants or other pest problems without a license.

The new law not only covers chemicals used to control insects but also many other chemicals which are not generally thought of as pesticides. For example, a groundskeeper at an office

complex using a fungicide on the grass, a weed and feed fertilizer herbicide mix, or an herbicide to control poison ivy or weeds, must now be licensed.

Requiring this group of workers to be licensed will assure the general public and building occupants that the applicator has demonstrated a basic understanding and knowledge of pesticide use and can use them in a proper and responsible manner.

Appendix A

Massachusetts Active SLN Registrations

- RAMIK BROWN (Hopkins Agricultural Chemical Co.)
  (Diphacinone) for use in orchards against rodents
  EPA REG. NO. 876-184
  MA SLN NO. 77-0001

- WEEDAR 64 (Rhone Poulenc)
  (DIMETHYLAMINE-2,4-D) for use on cranberries against weeds
  EPA REG. NO. 264-2
  MA SLN NO. 79-0001

- OMITE 6E (Uniroyal Chemical Co.)
  (PROPARGITE) for use on apples against spider mites
  EPA REG. NO. 400-89
  MA SLN NO. 82-0005

- DIAZINON 14G (Ciba-Geigy Corp.)
  (DIAZINON) for use on cranberries against cranberry girdler larvae
  EPA REG. NO. 100-469
  MA SLN NO. 83-0005

- TEMIK 15G (Rhone Poulenc)
  (ALDICARB) for use on potatoes against the colorado potato beetle
  EPA REG. NO. 264-379
  MA SLN NO. 86-0002

- BRAVO 720 (ISK Biotech Corp.)
  (CHLOROTHALONIL) for use on cranberries against upright and runner dieback
  EPA REG. NO. 50534-188
  MA SLN NO. 90-0001

- CARBAMATE WDG (UCB Chemicals Corp.)
  for use on cranberries against fairy ring disease
  EPA REG. NO. 45728-7
  MA SLN NO. 93-0002

- OMITE-6E (Uniroyal Chemical Co.)
  (PROPARGITE) for use on cranberries against the southern red mite
  EPA REG. NO. 400-89
  MA SLN NO. 93-0003

Appendix B

DFA : GROUNDWATER PROTECTION PROGRAM

ASSESSMENT OF REGULATORY COMPLIANCE IN 1992 & COMPLIANCE MONITORING INITIATIVES FOR 1993

Background :

The Department of Food and Agriculture's (DFA) groundwater regulations (333 CMR 12.00: Protection of Groundwater Sources of Public Drinking Water Supplies from Non-Point Source Pesticide Contamination) aim to protect public drinking water wells from pesticide contamination. These Regulations, effective as of January of 1992, restrict the use of certain pesticides identified as Potential Ground-Water Contaminants (PGWC) within the wellhead protection areas (i.e., Zone IIs) of public drinking water supplies yielding over 100,000 g/p/d. Pesticide applicators are required to switch to 'viable alternatives' in the place of PGWC products. If no 'viable alternatives' exist, applicators need to practice Integrated Pest Management (IPM) and/or obtain a Department approved Pesticide Management Plan (PMP) in order to apply the regulated products within these sensitive zones.

Implementation Process :

The Pesticide Bureau's **Groundwater Protection Program** opted for an educational/outreach approach in its effort to achieve compliance with the Regulations during the first year of program implementation - 1992. It should be noted, that this approach is in keeping with the EPA's OPPTS (Office of Prevention, Pesticides and Toxic Substances) change in philosophy and direction in regards to regulatory programs. That is, this change is reflected in a move away from a more traditional 'Enforcement Model' towards a 'Compliance Model' in order to enhance environmental protection. As part of this educational/outreach approach, the Groundwater Program has supplied **each** town containing a Zone II area, or portion thereof, with a GIS (Geographic Information Systems) map of said community for posting purposes. In turn, pesticide applicators are strongly urged to review the map for the town(s) in which they intend to apply a PGWC product in order to determine whether or not their application site falls within a Zone II area and if they are subject to the Regulations.

In addition to this innovative implementation measure, educational workshops on this Groundwater Protection Program were made available to pesticide applicators through various organizational forums, including the Farm Bureau and Green Industry Council, beginning in 1991. Certification/training workshops in conjunction with the UMass Cooperative Extension System were also provided. Additional outreach and educational initiatives included informational bulletins, program worksheets and program updates mailed to all certified/licensed applicators (approximately 5700 individuals) on a number of occasions.

Assessment of Regulatory Compliance in 1992 :

In order to gage compliance with the Regulations during the first year of implementation, the Groundwater Program is able to utilize both factual information and general reporting information for its assessment. To date, the hard data used in monitoring compliance levels relies on the number of PMP applications submitted. The Pesticide Bureau received 17 Pesticide Management Plan applications, 13 of which were approved. While the Bureau had little indication as to the number of PMP applications it would receive prior to program implementation, the actual number of plans submitted appears to be low in relation to the acreage of agricultural lands presumed to fall within Zone II areas. (For more information on agricultural landuse within wellhead protection areas see the section on Compliance Monitoring Initiatives for 1993.) Nevertheless, this relatively low number of PMP applications may be explained by applicators choosing to switch to alternative products. This practice is substantiated by the general reporting information received by the Bureau as explained below.

An additional source of factual data which would imply compliance pertains to the GIS maps. MassGIS, the State agency in charge of distributing data and producing maps, indicated that during this first year of Program implementation they have received a number orders for copies of those maps originally produced and distributed by the Bureau as part of its implementation process. These orders were received from various applicants, including cranberry growers associations, custom agricultural applicators, and other private companies. The fact that MassGIS charges a fee for producing these maps, supports the assumption that these various companies and associations have demonstrated a serious intent in following compliance procedures. Copies of these order forms remain on file at the MassGIS office.

Information received by the Bureau through general reporting of compliance from various sources including the Cooperative Extension System as well as representatives from both chemical companies and custom agriculture companies, indicates widespread collaboration on the part of applicators. More specifically, anecdotal reports illustrate that pesticide applicators are using 'viable alternatives' **regardless** of their location in order to ensure compliance. While at this juncture there is no established means by which to ascertain these reports and, thereby, to firmly assess program effectiveness through compliance, it appears that, in general, applicators aim to avoid the regulatory loop altogether by using other alternative chemicals and/or by practicing IPM rather than filing for a PMP. This substitution in product use is due in large part to the efforts of the Cooperative Extension System which has developed specific IPM program guidelines targeted to all major crops in Massachusetts, as well as 'General IPM Program Guidelines. In turn, these self-help guidelines or fact sheets are widely accessible to applicators.

Regardless of these efforts and apparent compliance with the Regulations, the Pesticide Bureau proposes a strategy by which to better assess this regulatory program during its second year of implementation. This strategy aims for a more comprehensive assessment of the Program by focusing on compliance/enforcement aspects more fully in order to determine the effectiveness of the regulations and identify any necessary changes or enhancements. This compliance/enforcement strategy is outlined below.

Compliance Monitoring Initiatives for 1993 :

PMPs & GIS

As indicated, one of the main sources by which to monitor compliance is through the PMP applications submitted. The Groundwater Program staff will continue to inform and support applicators through this process, and continue to tabulate the number of applications received as well as approved or denied. In addition, PMP applicants will be contacted by Bureau staff in an effort to better assess the process including a re-examination of the IPM practices utilized.

During 1993, staff will elaborate further on this important PMP process by producing 'custom' maps of these specific sites illustrating landuse, crop and pesticide information. These maps will be reviewed with the PMP applicants to verify data, particularly in regard to site information, and serve to chronicle this regulatory process. In addition, testing of the public water wells adjacent to these areas will continue on a yearly basis for as long as PMP applications are submitted in order to monitor water quality.

Lastly, Program staff will also initiate a GIS project in an effort to better identify agricultural lands within wellhead protection areas. To date, the amount of acreage of cropland and other agricultural landuse identified within Zone II areas, including orchards, nurseries and cranberry bogs, is listed as being 14,410.287 acres. However, given that the Department of Environmental Protection (DEP) revised its well information in November of 1992, resulting in significant changes in the amount of surface area designated as Zone IIs, this figure is no longer valid. Subsequently, this GIS project will result in improved information. It should be emphasized, however, that the Bureau does not anticipate this GIS data to reflect a true and accurate representation of agricultural lands in Massachusetts since the landuse information available is based on 1985 data. Nevertheless, despite these shortcomings, the results of this project are there to provide yet another piece of information that may be applied to an overall assessment of program compliance including the targeting of areas in need of improvement.

Pesticide Use Reports and Dealer Sales Records

Another example of tangible data available to the Bureau as a means by which to ascertain the level of regulatory compliance includes the Pesticide Use reports received from applicators. In 1991, the Pesticide Bureau, for the first time, developed a Pesticide Use form requiring all certified/licensed applicators to submit a yearly report of their pesticide use activities including information on pesticides and total amount used. Program staff will review the actual use records of PMP recipients to assess compliance with this process.

Furthermore, once the information from these use reports (i.e., approximately 5700 individuals) is entered into a computer database, staff will be able to gauge the total amount of the regulated products used. While specific use-site information is not available through these forms, that is, no direct link can be made between a regulated product and whether or not it is actually being used within a 'protected' Zone II area (except for PMP applicants), staff will be able to identify applicators using PGWC that did not request PMPs. The Bureau plans to develop and mail a survey/questionnaire to users of these products in order to assess compliance with the Regulations. Consequently, these yearly Pesticide Use Reports will be of value for observing the use trends of these regulated products, as well as for providing more specific

information on an individual's possible use violation.

In a similar vein, the Bureau's Restricted Use sales reports submitted by dealers will allow for the monitoring of sales of these regulated chemicals since the majority of the products identified under the Regulations are, in fact, restricted use pesticides. Unusually high purchase orders of these regulated pesticides will be investigated further by the Bureau's enforcement staff in an effort to ensure compliance with the Regulations. That is, applicators with high volumes of PGWC product purchases will be surveyed for compliance.

As part of this monitoring process, the Bureau also plans to carry out some random or spot inspections of both agricultural and commercial applicators in towns containing Zone II areas. This will provide Program staff with some additional, general information which, when used in tandem with other sources of monitoring data, will provide the Bureau with an overall picture as to the degree of widespread compliance. Subsequently, program areas in need of further attention will be identified.

Cooperative Extension System

The Bureau plans to assess and record information accumulated by the UMass Cooperative Extension System (CES) in reference to this regulatory process. Extension personnel have knowledge on individuals who switched to 'viable alternatives' and requested information and/or advice on IPM standards, and who are currently practicing an IPM program in order to comply. This is important information for the Bureau to maintain in its efforts to determine the impact of the regulations, as well as to arrive at a general assessment of these regulatory procedures. Consequently, in 1993, Program staff will further develop its contacts with CES in regard to this information.

Outreach

As previously indicated, the Bureau plans to develop a blind survey/questionnaire targeted at the regulated community in order to obtain information as to the overall awareness and understanding of the Regulation as well as to its impact. Beyond this initiative, the Bureau will continue to inform applicators on any changes in the Program including Zone II information through major mailings.

In a similar fashion to the CES data accumulation process, the Bureau will further develop its communication with the regulated community, particularly custom applicators such as Crop Production Services, Inc., in an effort to compile information on the effectiveness of alternative products and/or the use of more conservative application practices. These types of companies maintain records on various products and their effectiveness for their own business purposes; the Bureau believes that this information is particularly valuable in assessing regulatory impacts, particularly on the agricultural community.

Another potential avenue for further outreach, entails the support of regional planning commissions. Recently, the Bureau was contacted by the Pioneer Valley Planning Commission currently in the process of drafting a grant application to the Department of Environmental

Protection (DEP) under the 604B program entailing groundwater protection. In the event that this grant proposal is approved, said Commission would support the Bureau in targeting pesticide applicators in the designated areas which happen to include counties with high agricultural landuse. The value of this and similar support systems is twofold. Most apparent is the greater access that regional planning commissions may have to these individuals thus providing them with more direct assistance and, in turn, presumably achieving greater compliance. Yet, as important, is the benefit that the Department may acquire through this association. That is, the perception of a Boston-based regulatory agency, particularly in the western or more rural parts of the State, is not very conducive to program participation. If the Bureau seeks to continue in its path of regulatory compliance through education and collaboration, in contrast to a more traditional regulatory approach entailing more direct enforcement measures, this perception needs to be modified. The regulatory branch of the DFA can be more responsive to the regulated community by fostering this collaborative approach which would only be enhanced through these regional 'partnerships'. Consequently, the Bureau will actively pursue similar alliances in the interest of Program compliance.

Summary & Timeframe

The following is a summary of the Pesticide Bureau's Compliance Monitoring Initiatives for 1993 as discussed above, and the timeframe associated with each in an effort to achieve these goals.

PMPs & GIS

> PMP/GIS Custom Maps for review with PMP applicants - Spring 1993 for use during the growing season.

> Support by the Pesticide Bureau to applicants of PMPs - Ongoing.

> Public Water Supply Testing of PMP application sites - Fall 1993.

> GIS based landuse report - Summer 1993.

Pesticide Use Reports and Dealer Sales Records

> Pesticide Use Records of PMP Applicants. Review and recording of information for compliance assessment - Spring 1993.

> Database input of Pesticide Use Reports from all licensed/certified applicators - ongoing for 1992 report forms.

> Identification of pesticide applicators using PGWC based on Pesticide Use Report database, and development of survey/questionnaire targeted to these applicators - Subject to above.

> Review of Restricted Use sales reports for identification of high purchase orders of PGWC products. Subsequent investigations from the Bureau's Enforcement Staff to ensure and assess compliance - Summer/Fall 1993.

> Random inspections by the Bureau's Enforcement Staff of agricultural and commercial applicators in towns containing Zone II areas for compliance/assessment purposes - Spring/Early Summer. (so word gets out early in the season)

Cooperative Extension System

> Further development of CES/Bureau information exchange on 'Viable Alternatives' and IPM standards based on requests from pesticide applicators during the first year of program implementation. Information ultimately will be chronicled by the Bureau for program assessment and recording purposes - Beginning late Spring + ongoing.

Outreach

> Investigation of possible alliances between the Bureau and regional organizations such as with the Pioneer Valley Planning Commission for purposes of both information dissemination and information compilation in regard to the various aspects of the
Groundwater Program - To be decided.

> Initiation and development of information exchange process between the Bureau and commercial applicators, particularly custom agricultural companies, in regard to effectiveness of alternative products and programs, and impacts of the Regulations - To be decided.

> Survey/Questionnaire (see section under Pesticide Use Reports & Dealer Sales Records) - Summer 1993.