

“PESTICIDE SAFETY FOR THE 21ST CENTURY”

**The Findings and Proposals
of the
Certification & Training Assessment Group**

Draft Report for Stakeholder Review

January 1999

Table of Contents

Page	
3.....I.	Index
4.....II.	Introduction
4.....III.	Background
4.....A.	CTAG overview
5.....B.	Next steps
6.....IV.	Program Goals & Proposals
6.....	Goal 1: Reduce the risks to the public from pesticide use.
6.....	Background/Discussion
8.....	Proposed Program Changes
9.....	Goal 2: Provide high quality pesticide education and safety training programs.
9.....	Background/Discussion
12.....	Proposed Program Changes
13.....	Goal 3: Maintain the consistency, integrity and validity of the certification and recertification programs and processes.
13.....	Background/Discussion
16.....	Proposed Program Changes
17.....	Goal 4: Ensure that adequate and equitable funding is available to pesticide safety education training and certification programs.
17.....	Background/Discussion
20.....	Proposed Program Changes
21.....	Goal 5: Improve the efficiency of program organization and operations
22.....	Background/Discussion
25.....	Proposed Program Changes
26.....	V. Conclusion
27.....	Appendix 1 - C&T Assessment Group Member Volunteers
30.....	Appendix 2 - Summary of CTAG Baseline Assessment

I. Index

AAPCO	Association of Pest Control Officials
AAPSE	American Association of Pesticide Safety Educators
ASPCRO	Association of Structural Pest Control Regulatory Officials
C&T	Pesticide Applicator Certification & Training Program
CTAG	Certification & Training Assessment Group
CES	Cooperative Extension Service
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FQPA	Food Quality Protection Act
NPOs	National Program Offices (EPA and USDA)
PAT	Pesticide Applicator Training
RUPs	Restricted Use Pesticides
SLA	Pesticide State Lead Agencies
40 CFR 171	National EPA regulations that guide the C&T Program
✓	Indicates a long-term proposal that could result in significant change to the program
[]	Represents issues raised by CTAG members in their deliberations

II. Introduction

This draft report of the Certification & Training Assessment Group (CTAG), Pesticide Safety for the 21st Century, is being released to all stakeholders for comment. CTAG would appreciate feedback on proposals by April 2, 1999 to Jeanne Heying/EPA at 401 M Street, S.W. (7506C), Washington, D.C. 20460, fax (703) 308-2962, or heying.jeanne@epa.gov. Although feedback is sought on all proposals, CTAG especially appreciates comments on proposals marked with ✓. These proposals would require extensive dialogue, would be accomplished over the long-term and could result in significant change. Proposals are subject to change or elimination as a result of stakeholder feedback. Copies of this report and its executive summary are available from EPA at 703-305-7666 or <http://aapse.ext.vt.edu>. Input from stakeholders will be added to the final report and will be presented at the National Pesticide Applicator Training Workshop, August 7 - 11, 1999 in Portland, Maine <http://pmo.umext.maine.edu/ct/CT.htm>.

III. Background

A. CTAG Overview

With the establishment of the national pesticide applicator certification and training program (C&T) 25 years ago, national requirements were set by which states, tribes or territories could determine the competency of an applicator to use Restricted Use Pesticides (RUPs). National standards for determining the competency of a private or commercial pesticide applicator are found in 40 CFR 171. EPA has cooperative agreements in place with states, tribes and territories to operate the pesticide applicator certification program. State, tribe or territorial programs have established standards, through an EPA-approved certification plan, that are equal to, or more stringent than, those standards required in the regulations.

Since 1974, there have been numerous state and national efforts to evaluate the program. In 1985 and 1990, two national task forces were charged with assessing the program and recommending improvements. CTAG was established in 1996 to review previous national program evaluations, explore proposals identified by previous task forces, determine changing needs and provide direction for the future of the national pesticide applicator certification and training program. The mission is to develop and implement proposals that will enhance the knowledge, skills and attitudes of pesticide users necessary for safe and effective pest management.

CTAG is co-chaired by EPA and USDA, and consists of representatives from EPA Regional Offices, Pesticide State Lead Agencies (SLAs), Cooperative Extension Service (CES), Tribes, the Armed Forces Pest Management Board (AFPMB), the Association of American Pesticide Control Officials (AAPCO), the Association of Structural Pest Control Regulatory Officials (ASPCRO), and the American Association of Pesticide Safety Educators (AAPSE). CTAG members have determined that it is necessary for the Group to remain as a standing body so as to provide a forum for addressing the changing needs of the program. The structure of the group has changed from being team-oriented to a forum of open discussion with volunteers. Member volunteer composition has also changed and expanded over time. (For a complete list of member volunteers, see Appendix 1.)

To date, the group has met in March 1997, December 1997 and December 1998. The March 1997 meeting focused on the establishment of CTAG. After CTAG encouraged state certification and training programs to provide information on problems with the program and suggestions for its direction, CTAG met in December 1997 to review the information and draft proposals. (For a synopsis of the information gathered, see Appendix 2.) At that time, CTAG was structured in teams to review program status and needs in the following areas: Content, Infrastructure and Delivery, Evaluation and Funding. Each team developed a strategic plan with recommendations in those areas. Because of an overlap in recommendations, the strategic plans were combined into one single report. The report with proposals was then reviewed by USDA, EPA regional office Certification & Training Coordinators and CTAG members. The December 1998 meeting focused on drafting additional proposals as well as report composition and

distribution.

CTAG is proposing changes to the national C&T program by way of changes to FIFRA, the regulations (40 CFR 171), EPA and USDA activities, or activities in conjunction with states, tribes and territories. Any national program changes ultimately made through FIFRA or the regulations would be long-term changes that would also result in similar changes to state, tribe and territorial laws and regulations. CTAG recognizes that some of these proposals would require difficult and long-term changes that require extensive dialogue and feedback with stakeholders as they are being considered. Proposals marked with a ✓ have been identified as long-term efforts that would result in significant changes. Comments enclosed in square brackets represent issues raised by CTAG members in their deliberations. An executive summary of this report provides a condensed presentation of the results of the CTAG effort, and includes a brief background on CTAG's mission, five major CTAG goals identified for the program, and a list of proposals to move the program forward and sustain the vitality of the program in the 21st century.

B. Next Steps

This report will be distributed to the wide range of stakeholders that have a role or interest in the C&T program. The list of stakeholders includes federal agencies (EPA, USDA, DOD, etc.), State Lead Agencies, Tribal Contacts, Cooperative Extension Service PAT Coordinators, AAPSE, ASPCRO and AAPCO membership, and industry contacts. This preliminary report represents the framework for development of a final CTAG report and strategic plan for C&T that will shape the future of the C&T program. Based on the comments and feedback from all the various stakeholders in the process, a final CTAG report and strategic plan for C&T will be developed. That final CTAG report will be the blueprint for a package of recommended statute and regulatory changes and other program enhancements. This phase of review and comment by all stakeholders is expected to be completed by late Spring 1999. Based on input from all stakeholders, the final CTAG report and strategic plan for the C&T program will be completed by Summer 1999 and will be presented in its final form at the National Pesticide Applicator Training Workshop being held in August 1999, in Portland, Maine.

Although there will be other opportunities to comment on any proposed regulatory changes during official comment periods, the CTAG is seeking thoughtful consideration and frank and candid comments on this Preliminary Report so we can determine whether there is consensus opinion on the changes that need to be put in motion for the program.

If you have any questions concerning this draft report or the CTAG effort in general, you may contact Kevin Keaney or Jeanne Heying of the Certification and Worker Protection Branch in EPA at 703-305-7666 or John Impson of USDA Cooperative State Research Education & Extension Service at (202) 401-4201. You may also contact Jeanne Heying by email at <heyj.jeanne@epa.gov>. You may send your comments to: Jeanne Heying, USEPA, 401 M Street, S.W. (7506C), Washington, D.C., 20460, fax: (703) 308-2962 or in Word Perfect to <heyj.jeanne@epa.gov>.

IV. Program Goals and Proposals

Goal 1: Reduce the risks to the public from pesticide use.

Provide for the safe and effective use of pesticides by ensuring that all pesticide users, including homeowners, have access to appropriate pesticide safety education materials and/or pesticide safety training. Ensure that all pesticide applicators who apply pesticides as part of their occupational responsibilities or activities [that could result in pesticide exposures to the public through direct exposure/contact, residues on food or plant materials, or from drift] have received adequate pesticide education and safety training corresponding to their category/level of pesticide use.

Background/Discussion

Because pesticide programs have evolved tremendously over the past 20 years, the scope of the C&T program has also gradually expanded. When the pesticide applicator certification & training (C&T) program was established 25 years ago, the intent was to assure the competency of pesticide applicators using or supervising the use of RUPs. The C&T program began as a tool to mitigate the risks associated with RUPs, which were more toxic and thought to pose a much greater risk to human health and the environment than non-RUP products.

EPA's knowledge and understanding of the risks associated with pesticide use has changed significantly since the inception of the C&T program. As the science behind risk assessment has improved, pesticide applicator training programs have expanded and the level of knowledge necessary for a certified applicator to be competent has increased. Pesticide safety education and training have expanded to include protection of ground and surface water, endangered species, and farm workers as well as pesticides in precision agriculture systems, chemigation requirements, food safety concerns, and integrated pest management practices (IPM).

EPA now recognizes that homeowner and small farm operation uses of non-RUP products contribute significantly to the risk equation in protecting human health and the environment. Pesticide regulatory officials also acknowledge the need to address the pesticide education needs of the public and non-traditional C&T program clientele (e.g., those other than certified applicators). Awareness of this need to educate the public has heightened due to high profile incidents such as the misuse of methyl parathion in urban settings. Although there are efforts to expand public education through activities such as the Agency's Urban Initiative, there is no formal federal coordinated education program for consumers, homeowners or applicators of non-RUPs.

CTAG felt it was especially important to reinforce the concept that pesticide regulatory programs need to address the pesticide safety education needs of consumers, homeowners and the general public. Although many programs provide general pesticide education to the public, they are usually carried out without regulatory mandate and Federal funding support. Changing the program scope to include appropriate clientele and training topics would reflect the reality of public needs and benefits and assist EPA in meeting its mandate of protecting human health and the environment. CTAG is not proposing a requirement to train and certify homeowners and the public, rather it suggests a national voluntary public education program that is already provided by some pesticide applicator training coordinators.

In spite of the need to address more topics and educate more clientele, the regulations under 40 CFR Part 171 have not changed to reflect the widened scope of current program operations. Therefore, there should be official regulatory recognition of the need to ensure that all pesticide applicators who apply pesticides as part of their occupational responsibilities or activities (that could result in pesticide exposures to the public through direct exposure/contact, residues on food or plant materials, or from drift) have received adequate pesticide education and safety training corresponding to their category/level of pesticide use.

EPA's mandate to protect human health and the environment should be the basis for regulatory revisions that provide for establishing education and training programs covering all pesticide applicators/handlers involved with applying pesticides. Education and training are the cornerstone of pollution prevention efforts and represent one of the best opportunities for pesticide risk/use reduction. The current program is based on the conceptual model that a trained applicator is less likely to misuse a pesticide and to apply a pesticide when unnecessary. This model should be applied to all pesticide users.

An expanded scope of regulatory requirements would include the certification of applicators of RUPs and non-RUPs,

maintenance applicators and service technicians, (who are involved with applying pesticides in commercial operations). EPA should also integrate Worker Protection Standard training requirements/programs so that pesticide safety education and training is provided for the full continuum of pesticide user communities, from agricultural workers and handlers to all pesticide applicators.

In association with the expansion of the scope of C&T programs, EPA should also consider a new pesticide classification system to facilitate the different training needs of applicators and users. CTAG suggests that EPA consider some method of classifying pesticides in tiers based on the toxicity and assessed risk of the active ingredient and/or uses [and possibly the amount of the product to be used], and aligning the requirements for pesticide education and safety training (and certification/licensing requirements) with the classification of the product.

One example of a tiered classification would be:

- (1) consumer/homeowner use products;
- (2) general or unclassified pesticide products for occupational use;
- (3) restricted use pesticide products [based on current RUP criteria] for occupational use; and
- (4) restricted prescription use products for occupational use.

The prescription use category would be reserved for specific risk mitigation situations, as one possible approach to preserving certain minor-crop uses of high risk pesticide products. By only allowing specified uses based on a particular training and certification level of the applicator, this approach would mitigate the impacts of the Food Quality Protection Act and groundwater protection restrictions.

Another issue raised concerns the name of the program. CTAG felt the name of the program should be changed to reflect a pesticide education program that has expanded in scope and moves away from the traditional RUP-centered program to include public/consumer use practices and covers the wide range of risk reduction and risk management principles. A suggested name is the PESTAC Program (Pesticide Education and Safety Training and Applicator Certification Program).

Goal 1: Reduce the risks to the public from pesticide use.

Proposed Program Changes:

- ✓1.1 ***Initiate a National Consumer Education Program.*** Initiate a nationally organized pesticide education and safety training program targeted to consumers and/or homeowners that, provides for safe and effective use of pesticides by this segment of the user community. The program should be comprised of an extensive outreach and education campaign and the development and distribution of appropriate pesticide safety education materials. It should be coordinated in partnership with USDA, industry and EPA's Consumer Labeling Initiative, in order to maximize acceptance and utility of educational materials and make the best use of EPA and industry resources.
- ✓1.2 ***Expand the Regulatory Scope of the Program.*** Amend the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and revise 40 CFR Part 171 to expand the regulatory scope of the pesticide applicator certification & training program from its current focus on applicators of restricted use pesticides (RUPs) to include regulatory coverage of all pesticide applicators who apply pesticides as part of their occupational responsibilities or activities (that could result in pesticide exposures to the public through direct exposure/contact, residues on food or plant materials, or from drift). Revisions should allow for certain exemptions for small businesses and other situations, but would mandate specific training for applicators applying pesticides in places/areas that may result in high risk exposure (e.g., food processing and/or handling establishments, day care centers, schools, hospitals, etc.). The regulatory expansion would also

include provisions for the certification of dealers of occupational use pesticides (see Proposal 1.4 below).

✓1.3 ***Integrate the Worker Protection Standard Training Requirements With the New Applicator Training Program.*** In the expansion of the scope of pesticide applicator training programs noted above, provide for integration with Worker Protection Standard training requirements/programs so that pesticide safety education and training is provided for the full continuum of the pesticide user communities, from agricultural workers and handlers to the full spectrum of pesticide applicators.

✓1.4 ***Tiered Classification of Pesticides.*** Consider some method of classifying pesticides in tiers based on the toxicity and assessed risk of the active ingredient and/or uses (and possibly the amount of the product to be used), and aligning the requirements for pesticide education and safety training [and certification/licensing requirements] with the classification of the product. One example of a tiered classification would be:

- (1) consumer/homeowner use products;
- (2) general or unclassified pesticide products for occupational use;
- (3) restricted use pesticide products [based on current RUP criteria] for occupational use; and
- (4) restricted prescription use products for occupational use.

The prescription use category would be reserved for specific risk mitigation situations, and could be one possible approach to preserving certain minor-crop uses of high risk pesticide products. By only allowing specified uses based on a particular training and certification level of the applicator, this approach would mitigate the impacts of the Food Quality Protection Act and groundwater protection restrictions.

1.5 ***Change the Name of the Program.*** Change the name of the C&T program to reflect both the certification component and the scope and extent of pesticide education and safety training activities. A suggested name is the PESTAC Program (Pesticide Education and Safety Training and Applicator Certification Program).

Goal 2: Provide high quality pesticide education and safety training programs.

Ensure that all pesticide education and safety training programs meet national standards with regard to the content of the programs and the quality of training materials. Ensure that training coordinators for pesticide education and safety training programs possess the knowledge, skills and abilities to deliver effective training that meets the needs of pesticide users and keeps pace with evolving technological advancements and our changing understanding of pesticide risks.

Background/Discussion

A national standard or model pesticide curriculum was developed for pesticide applicator training programs about 20 years ago. Unfortunately, that model curriculum is outdated and efforts to revisit and update the curriculum have been hampered by issues such as levels of supervision and state differences in examination requirements. As other program issues were evaluated under the CTAG effort, establishing a national model curriculum resurfaced. By eliminating different levels of supervision and establishing different programs for certified applicators versus technicians, establishing a national model core curriculum for each type of training program makes even more sense. However, under the Food Quality Protection Act (FQPA), EPA does not have the authority to establish training requirements for maintenance applicators and service technicians.

The content of training programs and any national curriculum becomes increasingly more important when addressing reciprocity issues, examination requirements, exam validation and several other interrelated issues. Therefore, CTAG feels it is necessary to update the core pesticide education and safety training requirements for certified applicators and service technicians (or for any training program considered in regulatory revisions) to reflect the current needs and desired competency standards for pesticide users, before trying to establish the national curriculum. It is proposed that states (regulators and educators), the federal government (EPA, USDA, etc.) and industry work together in the development of new core requirements and a national curriculum for applicator training programs.

In developing the updated core requirements CTAG noted that special attention should be given to requiring a section on the ethics of making pesticide use/application decisions, emphasizing the responsibility of pesticide applicators to protect the environment and human health. In turn, a more professional industry would inspire increased public confidence in the assertion by EPA and industry that pesticide applicators are adequately trained to apply pesticides safely and effectively.

The EPA and USDA also have a mandate to promote IPM programs. Some states, tribes and territories currently provide IPM information in C&T programs. Although FIFRA requires that IPM information be made available to applicators upon request, it is not currently allowed under FIFRA to require IPM training. Adding IPM to federal core training requirements would encourage applicators to examine a variety of pest control alternatives and apply pesticides more effectively. Knowledge of IPM practices should allow applicators to prevent pollution from unnecessary pesticide applications and to identify alternatives when products are taken off of the market.

Maintaining quality training materials was identified by CTAG as a concern for C&T programs. Financial resources and in-house expertise are often inadequate to enable individual programs to develop state-of-the-art training materials. Currently there is no good mechanism to share quality training materials or resources to minimize duplication of efforts.

Training materials for initial certification training need to be developed and updated when new categories are established or additional conditions are placed on the use of specific pesticides. A nationally organized partnership between states, PAT coordinators, professional and commodity groups should be established for training projects in order to make effective use of resources and subject matter expertise. USDA requests for project proposals could encourage the use of partnerships in the development of materials, but PAT coordinators need to be involved as a partner in order to maintain consistency.

States also noted that they are increasingly relying on training materials and programs produced by independent organizations or groups outside of state influence or oversight. Such materials may have incorrect information or inadequately cover a topic. As a result, state programs have to expend resources reviewing these materials. A mechanism that allows for consistent review and oversight of such materials would increase the acceptance and utility of the materials by all pesticide safety trainers and educators while preventing unnecessary duplication of effort.

Review board members could volunteer, or they could be appointed by AAPSE/AAPCO to ensure that all states have an opportunity to participate. Materials could be reviewed much like peer review for academic publications. Review board members could also determine which specific specialty chemicals or uses would need industry involvement for the development and review of particular materials.

In addition to the need for technical review by trainers and educators, materials could be improved with end-user reviews while in the development stage. Such a process would help to assure the utility and acceptance of training

materials prior to completion and reproduction of materials. This process could be coordinated by AAPSE/AAPCO in conjunction with the other review mechanisms suggested above.

Generally, pesticide education coordinators do not have expertise in all categories of pesticide applications. The establishment of subject matter specialists to develop and/or serve as editors of materials under the direction and assistance of the AAPSE would make efficient use of resources. AAPSE should have the lead for setting up the process and coordinating the activities of those specialists who agree to develop and/or serve as editors of materials.

CTAG also noted that the NPOs and AAPSE should establish a mechanism to provide pesticide safety educators with opportunities to update skills and knowledge through an exchange between senior/junior educators. A Pesticide Safety Education Center is being proposed by AAPSE to provide continuous training and professional development opportunities to educators and regulatory personnel. Through this mechanism, private training sources along with senior program coordinators could offer short courses to junior trainers. One state suggests that the program be coordinated and rotated between the major agricultural universities so as to avoid travel costs and the expense of setting it up at one site.

With evolving technology, applicator training programs are presented with new challenges and opportunities in the transfer of information to applicators. Programs must integrate existing certification processes with the most effective, efficient and meaningful technologies available where appropriate. New technologies should be utilized when it is the most effective mechanism to deliver information for the subject matter concerned. It is important, however, not to lose sight of the needs of the audience and the educational objectives. Programs should focus on the effectiveness of the overall design of the program.

Some state programs have the resources and knowledge necessary to incorporate new technologies in their applicator training and education programs. In general though, states do not have the technical capacity or resources to develop training aids using advanced technology. States using more advanced technology should offer assistance to those who do not.

Similarly, some states lack technical expertise in certain areas, especially agricultural engineering, leading to a reduction of training focus in these areas nationwide. Expertise is especially needed in assisting applicators in equipment selection and maintenance, and drift reduction through equipment selection and the use of adjuvants, additives and application technology. These are basic concepts that, if left unaddressed or inadequately addressed could lead to misapplication problems.

CTAG felt it would be beneficial if there was a process developed to identify specialists with technical expertise needed by regional areas of the country, and have their services made available to all programs through a nationally coordinated mechanism. Persons with knowledge and practice in the use of new technology for training purposes could serve as mentors to those who would like to learn more. Mentors, their specific expertise and contact information could perhaps be identified and listed on the AAPSE web page.

Another problem cited was that training materials need to be revised on a more timely basis. A modular format would facilitate timely revisions and use by many program coordinators by easily adapting to the audience and subject matter. AAPSE could play a role in encouraging coordinators to develop materials in a modular format.

Program coordinators also cited the need for better access to information on training materials available. A mechanism for sharing information on materials, resources and plans for material revisions would maximize efficient utilization of resources while avoiding duplication of effort. A national web site is in the process of being developed

to facilitate the sharing of training materials. The web site will contain information on contacts for category-specific training materials in use by different programs. CTAG felt it was critical for the NPOs to support this effort.

Goal 2: Provide high quality pesticide education and safety training programs.

Proposed Program Changes:

- ✓2.1 ***Update Core Training Requirements and Establish National Model Curriculum.*** Update the core pesticide education and safety training requirements for certified applicators and service technicians (or for any training program considered in regulatory revisions) to reflect the current needs and desired competency standards for pesticide users, and establish a national model/standard curriculum for the updated core pesticide education and safety training requirements. In addition to existing and newly identified topics, the core requirements should, at a minimum, also include coverage of Integrated Pest Management (both agricultural and non-agricultural/urban IPM) and the ethics of pesticide use decisions and professionalism in dealing with the public. The regulations at 40 CFR Part 171 should be officially revised to codify the updated core requirements.
- ✓2.2 ***Provide Mechanisms for Coordinated Development and Review of Training Materials.*** The NPOs, AAPSE, and AAPCO should form partnerships among states, tribes, territories, industry, professional organizations, and commodity groups to coordinate development of training materials to improve the quality of training materials in use and to offset the burden on programs of individual states (SLA/CES), tribes and territories. The NPOs and/or AAPSE should create a national review board for oversight and review of federally-funded/coordinated training materials to raise the standard of quality for all training materials and to eliminate the use of materials with erroneous information. The NPOs and/or AAPSE should also coordinate a mechanism/process for end-user reviews of such training materials to build quality control into the development process.
- 2.3 ***Provide Mechanisms to Improve the Skills of Trainers/Educators.*** The NPOs and AAPSE should establish a mechanism to provide pesticide safety educators with opportunities to update skills and knowledge through periodic training workshops to promote an exchange between senior/junior educators. [Note: a feasibility study is being conducted to explore the feasibility of setting up regional/national Pesticide Education and Safety Training Centers for trainers/educators to provide a mechanism for accomplishing this objective.]
- 2.4 ***Establish a Network or Resource Pool of Subject Matter and Technology Experts/Specialists.*** The NPOs and AAPSE should coordinate identification and maintenance of a network of recognized subject matter specialists for different certification categories that could serve as coordinators for the development of new and/or updated training materials in each subject matter area. Additionally, a pool of experts familiar with new technology and precision agriculture and engineering should also be identified and tapped to serve as a resource for training other program coordinators and to provide training on program design and the appropriate use of advanced technology.
- 2.5 ***Develop Training Materials in an Electronic and Modular Format.*** NPOs should assure that developers of training materials use a modular and electronic format to facilitate sharing, updating, or modifying information, as well as adding area, region, tribe, territory, or state-specific information (a modular format has standardized units that allow one or more units to be updated or modified without having to make changes to the whole document).

2.6 ***Establish National Web Site Directory of Training Materials.*** NPOs should support development of a national web site to provide information on the existing pool of training materials (status, sources, availability, etc.). The web site would also facilitate the sharing of available materials while avoiding duplication of efforts, and would therefore reduce resources and costs associated with developing materials.

Goal 3: Maintain the consistency, integrity and validity of the certification and recertification programs and processes.

Ensure that all pesticide applicators being certified and/or recertified meet national competency standards and occupational prerequisites for applicators.

Background/Discussion

Some state, tribe or territory programs have established prerequisites for applicator certification such as minimum age, English language comprehension and related job experience. By establishing prerequisites, programs are able to raise the standard of applicators, increase public confidence and possibly mitigate risks. It is being proposed that prerequisites be established on a national basis.

States, tribes and territories have the option of requiring that pesticide applicators become recertified by taking an examination, participating in a continuing education program or both. The value of a continuing education program is so that applicators can increase their knowledge of the safe use of pesticides and on new pest control technology and application techniques. Benefits of a continuing education program to applicators are, they can: 1) choose courses that target their specific needs; 2) acquire new information that may not otherwise reach them and 3) learn through interaction with other applicators and instructors.

Due to the benefits of mitigating risk and improving applicator competency, state, tribe and territory programs that currently require only examination for recertification should be encouraged to adopt a continuing education program. At the same time, some programs would maintain that competency should be determined on the basis of examination for both certification and recertification. It was suggested that states that require only a continuing education program, should also require that applicators take an exam at some regular interval (e.g. every other recertification period) or require it when a misuse occurs. However, this could be a problem for those states with a large number of applicators.

State, tribe and territory certification programs need to ensure that all applicators are determined to be competent. Currently, FIFRA prohibits the requirement of a written test for private applicators. Some programs certify private applicators to use RUPs without taking an examination. Although many programs have passed legislation requiring examination of private applicators, some state laws prohibit imposing restrictions above those required under Federal regulations. National inconsistency in determining competency limits reciprocity and lessens public confidence. Misuse incidents involving private applicators certified by means other than examination undermines the credibility of the industry. Ultimately, EPA's goal to protect human health and the environment suffers.

Before regulations could be put in place to require that private applicators take a written, closed book exam for certification, Section 11 of FIFRA would need to be revised. Although this may be a controversial issue with opposition by Farm Bureaus or other agricultural industry groups, most programs already require some kind of examination. The industry and agricultural commodity organizations are shifting toward a position that assuring competency and credibility is critical to keeping pesticides available for use by growers.

State, tribe and territory certification programs also need to ensure that their written examinations accurately determine the competency of a pesticide applicator. In order to achieve this, pesticide applicator certification programs would need to use the exam validation process. The process of validating an exam involves conducting a job analysis, selecting a team of experts, developing a test outline, learning how to write valid test questions, assembling a test and determining a cut score. Not all state, tribe or territory program personnel have the expertise in writing examinations. By using the exam validation process, both programs and the public would be assured that certified applicators were adequately determined to be competent. Programs would also be more confident of their position and procedures in the event of a legal challenge of their exams.

States, tribes and territories have encountered many obstacles in establishing reciprocity agreements due to differences in programs. To the extent possible, states, tribes and territories felt the national program needs to facilitate reciprocity agreements. Although there has been some success in establishing reciprocity agreements, many programs have determined that there are too many obstacles. It has been suggested that the national program hold a series of regional workshops to establish a guidance document on establishing agreements, address reciprocity issues and share information on successful agreements. The intent of the workshops would be to establish a how to framework and a foundation leading to the development of reciprocity agreements. Reciprocity agreements facilitate conservation of resources and coordination between states.

40 CFR Part 171 does not designate a recertification period for applicators. Currently, most state, tribe or territory laws require that applicator certifications be renewed every three or five years. Most program coordinators felt that a national maximum certification period should be established in the federal regulations in order to set a national limit, and regulations should clearly address what recertification options are required. Amending 40 CFR 171 to establish a maximum certification period of five years would promote consistency among state, tribe and territory laws and regulations governing recertification. A maximum certification period would allow states, tribes and territories to choose a recertification period of five years or less.

Another issue regarding exams is that state certification programs are not required to include the subject matter areas listed in 40 CFR 171 in written examinations. Each state has the option to add subject areas to the exams as appropriate. Certification exams, at a minimum, should be required to test on the content of the subject matter areas listed in 40 CFR 171. The federal regulations could be changed to require states to test applicators on these subject matter areas at a minimum, and changing the minimum standard should be considered as well.

Another exam-related issue identified as a concern is that training materials and certification exams are not always updated simultaneously. The certification examination is used to test the competency of the applicator. The information delivered to the applicator via education and training materials is used to prepare for the examination. It is important that examinations and training materials be simultaneously updated. This requires close coordination between agencies involved in the certification program to assure that exams accurately test on topics that are covered in training manuals and sessions. Cooperative Extension Service pesticide applicator training coordinators suggest that manuals be developed in modular format to facilitate the updating of materials and allow for easy regional adaptation.

It has been suggested that the NPOs work with AAPCO and ASPCRO to appoint a group to develop a national, secure, voluntary database of valid and reliable exam questions. Although this has been attempted in the past, the exam questions are not a result of the exam validation process. However, not all states, tribes or territories will want to share exam questions.

Some states have existing technology to provide potential applicators with feedback on exams. Exam feedback is an effective training tool and technical assistance device allowing potential applicators to determine gaps in knowledge. Giving feedback may facilitate compliance with the law and more effective applications. Electronic grading machines

with the proper programming can be used to accomplish this task. It has been suggested that a one-time increase in funding, industry funding or grants be used to purchase grading machines, software or scanners as needed.

Each state, tribe or territory program should maintain a database of certification records in order to track certifications, provide notification to category groups when necessary, distribute materials and provide certification/recertification status information. In order to create a database, programs need to be aware of available licensing software. The NPOs could work with states, tribes and territories to collect and maintain such information.

Each state, tribe or territory program should develop or become part of a web page for the purpose of communicating with clientele. Web sites reach C&T clientele, general public, CES county staff, SLA field staff and advisory groups. The NPOs could work with AAPSE to coordinate development of a guidance document by those states who have user-friendly web pages. Web page development training could be offered where the guidance document could be provided and used as the training manual. Currently, two CES coordinators have received a grant to work with programs to update or create web pages.

Some states, tribes and territories would like national guidance on how to comply with the American Disabilities Act with regard to providing accommodation in training or certification of potential applicators. It has been suggested that states, tribes and territories share their policies and experiences. However, professional credentialing organizations suggest using an attorney to make case-by-case determinations.

Goal 3: Maintain the consistency, integrity and validity of the certification and recertification programs and processes.

Proposed Program Changes:

- ✓3.1 ***Establish Prerequisites for Certification.*** Establish certification prerequisites for applicator certification such as a minimum age requirement, the ability to read and comprehend the English language and related job experience.
- ✓3.2 ***Require Continuing Education Program.*** Require that all states, tribes and territories establish a continuing education program as part of an applicator recertification program.
- ✓3.3 ***Require Written Exam for All Applicators.*** Change FIFRA and regulations to require that competency in the use and handling of pesticides be determined on the basis of written exams for all applicators who seek to be certified through a state, tribe, territory, or federal program to use restricted, general use, or unclassified pesticide products.
- ✓3.4 ***Require Use of Validation Process for All Exams.*** Require that all states, tribes, and territories use a validation process for all certified applicator exams and update exams in a timely manner as training materials are revised. Exam validation is a process whereby exams are created to test knowledge in tasks necessary to perform an applicator's job. The process includes setting up an exam committee, conducting a survey of applicators, determining what skills and knowledge are necessary to do an applicator's job, determining the number and types of questions linked to each task area, writing questions, and establishing and using cut scores. EPA will be holding a workshop providing interested states, tribes, and territories with tools on how to use the exam validation process.

- ✓ 3.5 **Facilitate Establishment of Reciprocity Agreements.** The NPOs could coordinate workshops to promote discussion of reciprocal agreements across states, and establish a workgroup to focus on long-term program changes to facilitate reciprocity agreements. Some of the other CTAG proposals could help alleviate reciprocity issues. In addition, a coordinated Web site should include each state's program categories and definitions.
- 3.6 **Establish a National 5-Year Maximum Recertification Period.** Establish regulatory requirements for a national maximum certification period of five years for all certified applicators; develop regulatory requirements for recertification programs and options. States, tribes, and territories would be able to establish a certification period of five years or less.
- 3.7 **Upgrade Content of Certification Exam.** Revise regulations to require states to upgrade the content of a certification exam to an accepted minimum standard. Exams should, at a minimum, be required to test the content of the subject matter listed in 40 CFR 171.
- 3.8 **Update Exams Along With Materials.** States should update examinations in a timely manner as training manuals and materials are being revised. This proposal requires close coordination among agencies involved in the education and certification programs.
- 3.9 **Establish an Exam Database.** The NPOs could work with AAPCO and ASPCRO to coordinate the development of a national, voluntary, secure database of examination questions. It would be desirable to include only those questions that are a result of the exam validation process.
- 3.10 **Provide Funding for Purchase of Electronic Grading Machines.** EPA should consider providing a one-time increase in funding for the purchase of electronic grading machines so that applicator testers can receive exam feedback.
- 3.11 **Maintain Information on Licensing Software.** The NPOs should collect and maintain information on licensing software and facilitate the adoption by states, tribes and territories of computerized tracking technology for certification. The NPOs should also work with states, tribes, and territories to develop a standard set of tracking fields for the licensing software to satisfy EPA reporting requirements.
- 3.12 **Develop or Improve Web Pages.** The NPOs, with the assistance of AAPCO and AAPSE, should develop guidance and encourage each state, tribe, and territory to become part of, or develop their own, Web page on pesticide applicator certification program offerings.
- 3.13 **Share Policies and Experiences on American Disabilities Act.** States, tribes, and territories should share policies and experiences regarding accommodations provided to potential applicators with disabilities. The NPOs and AAPCO could facilitate the sharing of such information either informally or on a national Web page. The purpose is to assist states in establishing policies to provide accommodations for applicators determined to be eligible, while protecting the state from legal challenges.

Goal 4: Ensure that adequate and equitable funding is available to pesticide safety education, training and certification programs.

Ensure that pesticide education and safety training programs have adequate resources to meet the needs of the public and the clients being served by the program. Ensure that the distribution of federal funds, which support the programs is equitable and based on factors that reflect true program workloads and outputs.

Background/Discussion

As was discussed under the Goal 1 proposal to expand the scope of the program, new initiatives, certification categories and a shift in applicator numbers from agricultural to non-agricultural, have increased program responsibilities without commensurate funding. To ensure that funds are distributed in the most equitable manner for an effective overall national program, the funding formula for the pesticide State Lead Agencies should be revised to assure it is appropriate for today's programs. Formula changes should be implemented as necessary to assure equitable funding distribution.

EPA awards approximately \$3 million to pesticide State Lead Agencies each year. Funds are distributed to SLAs using the following formula:

- \$23,000 total to the Pacific Islands
- \$17,000 to Colorado to administer the state commercial applicator certification program
- \$57,000 to EPA Region 8 to administer the Colorado private applicator certification program
- \$22,000 to each state (except Colorado and Wyoming), District of Columbia, Puerto Rico and the Virgin Islands

The remaining funds are awarded according to the following formula:

- 5% based on the number of farms
- 40% based on the number of private applicators
 - 10% number initially certified in the fiscal year
 - 10% total number of private applicators counted as having certification that fiscal year
 - 20% number recertified in fiscal year
- 40% based on the number of commercial applicators
 - 10% number initially certified in the fiscal year
 - 10% total number of commercial applicators counted as having certification that fiscal year
 - 20% number recertified in fiscal year
- 15% to EPA Regional discretionary funds

The number of farms was intended to weight the formula based on the degree of agricultural production in each state. However, the number of farms is not necessarily indicative of agricultural production or its impact on the certification program since it does not take into account farm size, use of pesticides or number of pesticide applicators per farm. Also, since certification programs must address both agricultural and non-agricultural pesticide applicators, weighting the formula based on the agricultural component may not be appropriate. It could be argued that private applicator components of the formula should account for the number of farms.

Because grant regulations at 40 CFR 35.115(k) require EPA to base the C&T funding formula on the number of applicators and farms, a change in formula would entail regulatory revision. In the short term, a flexible definition of farm or a reduction in the weight applied to number of farms could be used. In the event of a regulatory change, the 5% designated for farms should be distributed among private and commercial applicator certification numbers to reflect services needed.

Regional discretionary funds provide the states, tribes and territories with the opportunity to receive funding for specific projects that will benefit the pesticide applicator certification and training program. Programs are interested in receiving feedback from the EPA Regional offices on projects funded and the resulting product. In this way, programs would have an understanding of the big picture concerning the use of those funds over time. In addition, adequate consideration should be given in those programs using Performance Partnership Grants (PPGs) where there is a flexible use of funds across program areas.

The 50/50 match has been of some concern because of its inconsistency with the 85/15 match required by other grants. Although many states contribute more than the required 50% match, some states provide only those funds necessary to meet the match requirements. One state suggests that it would be useful to gather actual data to see how many states, tribes and territories would be affected by a change in matching requirements. If data gathering is not feasible, at least both sides of the discussion should be presented in the draft report to stimulate response.

EPA passes approximately \$2 million to USDA/Cooperative State Research Education and Extension Service via an inter-agency agreement to support applicator training by Cooperative Extension Services. USDA/CSREES does not contribute any funds for the same purpose. USDA distributes EPA funds to CES using the following formula:

- \$15,000 base for each state or territory
- 10% based on the number of private applicators trained since the inception of the program
- 10% based on the number of commercial applicators trained since the inception of the program
- 40% based on the number of commercial applicators currently certified on record
- 20% based on the number of private applicators currently certified on record
- 20% based on the number of farms

This formula does not reflect the growing demand of educational programs for non-agricultural related industries or the general public. Although there is no specific recommended changes, CTAG suggests that this formula be evaluated and reconsidered by USDA, EPA and SLAs and CES representatives. Because Extension provides service to applicators, one SLA is against using factors based on acres or active ingredient.

In order to accommodate the expanding scope of the program, new mechanisms may need to be explored for an increase in funding. The current financing of the federally-mandated restricted-use applicator C&T program is dependent primarily on federal and state funding. This is an unusual situation compared to most professional organizations where the costs of certification and licensing of a group is absorbed by the professional organization (e.g. medical and legal professions). With the C&T program, the public is absorbing the cost of applicator certification.

While both agriculture and society also benefit from the proper use of pesticides, registrants receive particular benefit from a program which ensures proper handling and application of pesticides because they are able to sell their products to an existing network of trained and certified applicators. Without the continued education, training and licensing of applicators through the established federal, state, tribe and territory applicator certification mechanisms, sales of restricted-use pesticides could be greatly reduced or eliminated. Because of the benefits received, registrants should share responsibility for the expenses incurred in its implementation.

CTAG suggests that EPA should pursue levying a fee on pesticide registration to be used for the national certification and training program. EPA should pursue the implementation of this fee during the 2001 assessment/review of FIFRA's fee structure. One state suggested that a tiered fee system be established whereby fees for RUPs would be higher than for other non-restricted products.

Also, CTAG suggests that states, tribes and territories should explore other non-traditional sources for funding their programs to reduce reliance on general revenue funds. Examples are fee-for-service training options and industry and trade-association partnerships to help cover the cost of development of training materials, educational projects and/or advanced technology demonstrations.

CTAG also noted that the terms certified and licensed may be interpreted differently by each state program. States may use the terms interchangeably to gain an advantage in funding. For example, a state certification period may last three years. During the three-year period, the applicator may have to pay a fee to renew the certification

every year. Certification, as defined in 40 CFR 171.2 (a)(7) refers to the formal and legal indication that a pesticide applicator has met the standards of competency prescribed under FIFRA and state laws. Licensing refers to the issuance of a license or permit to a person or a firm for business purposes. In some states, certification is a prerequisite for obtaining a license. These definitions should be distinguished from each other and used appropriately by all state programs when reporting certification and recertification numbers to EPA for funding purposes. When conducting reviews of programs, EPA Regional offices need to make sure that definitions are used appropriately.

Finally, CTAG noted that some programs are able to generate funds to supplement federal funds received for applicator certification programs. States should share information on how to raise supplemental funds with programs that have insufficient resources. NPOs and AAPCO/AAPSE could facilitate the sharing of such information.

Goal 4: Ensure that adequate and equitable funding is available to pesticide safety education, training and certification programs.

Proposed Program Changes:

- ✓ 4.1 ***Change the Federal Funding Formula for Distributing C&T Funds to State Lead Agencies (SLAs).*** To ensure that funds are distributed in the most equitable manner for an effective overall national program, EPA should consider revision of the federal funding formula that determines how C&T funds are distributed to SLAs to assure it is appropriate for today's programs. A mechanism should be put in place to assure the formula is reviewed periodically and adjusted as necessary. The 5% factor based on the number of farms should be replaced with a factor that more adequately reflects program workload and best serves all programs. [Note: The grant regulations at 40 CFR 35.115(k) require EPA to base the C&T funding formula on the number of applicators and farms, so implementing this proposal would most likely entail regulatory revision, although it is possible this proposal could be implemented in the short term by using a flexible definition of farm or by reducing the weight applied to number of farms.]
- ✓ 4.2 ***Change the Federal Funding Formula for Distributing C&T Funds to the Cooperative Extension Service (CES) Program Offices.*** USDA should pursue changing the federal funding formula that determines how C&T funds are distributed to CES program offices to assure it is appropriate for today's programs. A mechanism should be put in place to assure the formula is reviewed periodically and adjusted as necessary. A factor based on the number of acres treated, agricultural acres, or pounds of active ingredient used, should be used instead of the 20% factor designated for farms.
- ✓ 4.3 ***Assess a Pesticide Registration Fee to Help Cover Program Costs.*** EPA should pursue the establishment of a fee on pesticide registrations that would be used to cover part of the costs of the pesticide education and safety training and applicator certification programs.
- ✓ 4.4 ***Explore Non-Traditional Sources for Program Funding.*** States, tribes and territories should explore non-traditional sources for funding their programs to reduce reliance on general revenue funds. States should consider fee-for-service options and industry and trade-association partnerships to help cover the cost of development of training materials, educational projects and/or advanced technology demonstrations.
- ✓ 4.5 ***USDA should provide funding to the Cooperative Extension Service (CES) Program Offices.*** USDA should expand its leadership role in coordinating administrative, technical and support roles related to pesticide management. It should provide funding, at least equivalent to EPA, for pesticide education and training programs, outside the scope of PAT. Farm worker training, pesticide record keeping programs and

health care professionals would benefit from increased funding opportunities. Pesticide misuse in the urban and suburban setting can injure or kill homeowners and their pets, and cause environmental degradation as a result of runoff from lawns and gardens. Competitive research grants should be initiated for protective clothing and equipment (PPE) for applicators and farm workers. Safer methods of handling and disposing of pesticides should be investigated.

- 4.6 ***Provide Information to Programs on Use of EPA Regional Discretionary Funds.*** The EPA Regional offices need to coordinate with EPA Headquarters to provide information to all states, tribes and territories on the projects which were funded with regional C&T discretionary funds and the products or results of the funded projects.
- 4.7 ***Clarify and Adopt a Common Definition of Certified Applicators for Reporting Purposes.*** The NPOs should clarify and adopt a common definition of certified applicators so that SLAs use a common definition when reporting accomplishments. When conducting reviews, EPA regional offices need to verify reporting information and assure that SLAs are using these definitions appropriately since these reporting numbers affect future funding levels.
- 4.8 ***Share Information on Supplemental Funding.*** The NPOs should facilitate the sharing of information on how various programs are successfully generating supplemental funds to support their certification programs. AAPCO and/or AAPSE could also facilitate this sharing of information by having sessions devoted to this topic at their national meetings.

Goal 5: Improve the efficiency of program organization and operations.

Assure that the operation of pesticide education and safety training and applicator certification programs are coordinated through the National Program Offices (NPOs) to insure cooperation between implementing agencies and to provide for consistent evaluation, management and marketing of the program.

Background/Discussion

The evaluation of C&T programs is necessary in order to be able to identify areas for improvements to pesticide applicator training programs. Additionally, government agencies are being asked to document accomplishments for program accountability and this requires systematic evaluation to obtain results that will provide us with adequate measures of success.

There are two main aspects of the program to consider when looking at the C&T program evaluation process. It is necessary to determine the quality of the training and education side of the program, by evaluating materials, training content/format and trainers (or alternate training delivery systems in some cases). It is also necessary to determine the outcomes or impacts of the training program, by evaluating applicator competence and behavioral change. Additionally, consideration needs to be given to evaluating the potential environmental and human health benefits that are gained through the applicator's increased knowledge, competence and behavioral change.

While surveys can be an effective evaluation tool, they can be time-consuming, costly, and require a certain level of expertise to assure validity of the survey. Many states do not possess the staff and/or financial resources to develop surveys and implement their use as an effective and valid evaluation tool. Developing a national survey instrument for states to use in measuring applicator knowledge and behavioral change could help many states in their program

evaluation. This would lead to a greater ability to assess their program, identify problems and make improvements to the program. Additionally, a national survey instrument may enable the national program to get uniform evaluation results that could be used for GPRA purposes.

The survey should be developed with technical assistance from the state program coordinators, a trained statistician and education specialists. A mechanism (regional workshops, etc.) should also be developed for providing training to states on how to develop valid survey instruments. One suggestion is for AAPSE to produce a national survey.

To evaluate outcomes/impacts of training, we also need to identify trends in compliance and monitoring. Patterns of misuse and misapplication can be addressed through modification of the training and education program. Pesticide safety training coordinators need to work with pesticide regulatory officials and appropriate insurance representatives to determine application errors that should be addressed in training. One possible approach is to develop a system for reviewing enforcement cases and/or data, which then can be used as a guide and tool in developing training needs.

Another method to evaluate the success of a training program is to conduct compliance audits of newly certified applicators. Conducting such audits could yield valuable information about whether concepts taught in the training program are being applied in practice in the field. Working closely with newly certified applicators could help prevent bad habits from being formed that could result in misapplication. If the states do not have the capacity to work with all newly certified applicators, states could randomly select a number of applicators. The results of these field evaluations could yield valuable information regarding behavioral changes as a result of training.

Each state should be required to formalize a process for creating a feedback mechanism so the results of the enforcement program are linked to the training part of the regulatory program. Examples of situations where states were able to document reducing misapplication or misuse incidents should be reported to the national program office in a systematic mechanism for inclusion in EPA's GPRA reporting. Such activities should also be explicitly covered during grant oversight visits by regional project officer annual program reviews. The national program should also address this issue when developing agendas for regional and national PAT meetings. One state suggests that information is exchanged through an informal relationship between programs that cannot be mandated.

It is important to have effective cooperation between the certification and training aspects of the program to compliment and assist each other. Effective cooperation is especially needed to close the loop between patterns of misuse incidents and education to prevent those incidents. While some programs have close, effective working relationships, others have not been able to achieve a level of effective cooperation.

Agencies without an effective level of cooperation could learn from others through the sharing of success stories. Information could be shared on a national web site to highlight projects that demonstrate effective cooperation. Regions should use the cooperative agreement oversight process, regional SFIREG and PAT meetings to promote a forum for agencies to meet and improve communication and coordination.

The National PAT workshop, national web pages, annual report or white paper are all opportunities for states to learn about how to improve communication and cooperation. The four USDA Tri-Agency meetings are regular annual or biannual (depending on the choice of the region) meetings where state, tribe and territories, CES, EPA regions, USDA and EPA Headquarters come together to share ideas and information. Pesticide State Lead Agencies need to be encouraged to attend the Tri-Agency meetings, as well the National PAT workshop held biannually.

The national program has not identified a valid mechanism for evaluating the potential environmental benefits that are gained through the applicator's increased competence and behavioral change. Trying to correlate environmental

benefits/results with training quality, applicator competence and applicator behavioral change is very difficult and may require assimilation of detailed use data and environmental monitoring data. EPA may need to consider pilot projects to look at the feasibility of developing such measures. Pilot projects could be solicited through an RFP and handled in the same way C&T special projects are funded.

As part of an effort to continue offering quality and effective training, states should be encouraged and directed, through national program guidance, to monitor the content and delivery of certification and recertification training meetings.

As a mechanism to report on, and update the status of applicator certification and training programs, it is recommended that EPA Regional offices review State Plans on a regular basis. The NPOs should include language in national guidance that directs EPA regional offices to conduct a review of State Plans with SLA and CES staff to assure that an annual program review and evaluation occurs in each program.

The pesticide applicator certification & training program represents one of the primary risk mitigation mechanisms for pesticide programs. Educating users to safely use and handle pesticides is a key component of pollution prevention efforts and plays an important role in minimizing pesticide incidents. There needs to be a greater awareness of the importance of the program. EPA management, Congressional representatives and the general public all need to be more cognizant of the benefits of the C&T program and its importance to EPA's mission of protecting human health and the environment.

The C&T program's great potential for achieving risk reduction and pollution prevention, and its important role in a pesticide regulatory program are overlooked even within EPA. There needs to be more emphasis placed on marketing the program so that it is recognized as a priority program critical to achieving EPA's goals and mission, and receives the commensurate funding support. The C&T program needs to be highlighted and emphasized within EPA's and USDA's Strategic Plans and GPRA Goals and Objectives.

USDA prepares an internal report documenting Cooperative Extension Service accomplishments for each fiscal year. With the upcoming use of GPRA reporting, USDA will be creating a report that further demonstrates the benefits of pesticide applicator education and measures the results of the program. Many states also publish their own annual report which may include numbers of applicators trained, courses offered, special initiatives and program highlights and accomplishments. EPA creates an annual report that briefly mentions the functions and benefits of the pesticide applicator training and certification program.

There is a need to develop an annual report that would improve the public's understanding of the total scope of the program as well as the range of accomplishments of the program. This report should capture the establishment of: higher competency standards, a national model curriculum, a more professional industry emphasizing ethics and applicator responsibility, and efforts to reduce misuse incidents by feeding results of complaint and compliance investigation results and insurance claims into education programs. Since the program's inception 25 years ago, EPA and the states have made great strides in assuring applicator competency and reducing pesticide misuse incidents that might have occurred in the absence of the C&T program. The report should be widely distributed and made available on a national web site so that it reaches the intended audience (EPA, USDA, Cooperative Extension Services, Pesticide State Lead Agencies, Congress, applicators, commodity groups and the public).

Additional materials should be developed to inform audiences of the function of the C&T program and the vital role it plays in EPA's risk mitigation efforts. Items such as trifold brochures that describe the role and the infrastructure of the C&T program, and convey the extensive network of trainers and educators involved in the program, need to be produced and distributed by EPA.

Goal 5: Improve the efficiency of program organization and operations.

Proposed Program Changes:

- ✓ 5.1 ***Develop National Tool/Process to Measure and Evaluate Program Success.*** Develop a national survey instrument to enable states, tribes, and territories to evaluate their programs and measure applicator knowledge and behavioral change. A national survey instrument would avoid duplication across states, tribes, and territories, and could also be used to develop national program reports that capture program impacts and accomplishments. The NPOs and/or AAPSE could oversee development of the survey instrument, which would be developed with the technical assistance of state program coordinators, a statistician, and education specialists.
- ✓ 5.2 ***Improve Capabilities for Assessing Program Effectiveness.*** Develop national program guidance for the C&T program that explicitly directs coordination between training coordinators, pesticide regulatory officials and appropriate insurance representatives to determine compliance issues that should be addressed in training, and also directs programs to use applicator feedback in evaluating program effectiveness.
- 5.3 ***Improve Program Cooperation Between Implementing Agencies.*** The NPOs and EPA regional offices should work with states, tribes, and territories through the cooperative agreement oversight process and regional meetings to facilitate cooperation between implementing agencies. The NPOs and EPA regions should encourage regular meetings between SLAs and CES, provide programs with opportunities to learn how to improve communication and cooperation, and promote examples of success stories.
- 5.4 ***Fund Pilot Projects That Provide Program Evaluation Tools.*** The national program should fund pilot projects that explore implementation of innovative evaluation mechanisms for C&T programs that could be used as models for other states to use in their programs.
- 5.5 ***Encourage Monitoring of Training Programs.*** The NPOs should include language in national guidance that directs or at least encourages programs to monitor certification and recertification training meetings for content and delivery as part of the national effort to assure effective quality training.
- 5.6 ***Require Annual Review of State Plans.*** The NPOs should include language in national guidance that directs EPA regional offices to conduct a review of State Plans with SLA and CES certification staff to assure that an annual program review and evaluation occurs in each program.
- 5.7 ***Effectively Market the C&T Program and Promote Accomplishments.*** The NPOs should develop an explicit strategy and/or mechanism to adequately capture the C&T program accomplishments and highlights such that stakeholders (both internal and external) would have an improved understanding of the total scope and importance of the program and the range of accomplishments associated with the program. The NPOs should also explore options to effectively market the C&T program.

V. CONCLUSION

The overall objective of CTAG's proposed program changes is to help EPA fulfill its mission of protecting human health and the environment, and adequately safeguard the public, especially children, from the risks resulting from pesticide application. On a day-to-day level, the intention is to ensure the quality and efficiency of pesticide education, safety training and applicator certification programs, offering pesticide users at every level the information and training they need to make environmentally sound and responsible decisions. EPA welcomes comments from interested parties on the proposals presented in this document by April 2, 1999 to Jeanne Heying/EPA at 401 M Street, S.W. (7506C), Washington, D.C. 20460, fax (703) 308-2962, or heyings.jeanne@epa.gov.

Appendix 1

C&T Assessment Group Volunteer Members

EPA and USDA would like to thank the following persons for their time and dedication to the CTAG effort. The following volunteers did one or more of the following: provided comments on draft reports, participated in and lead meetings, took notes, wrote reports, co-lead a CTAG team, coordinated with other members, participated in and/or lead conference calls and offered suggestions. Volunteers who have since changed jobs and are no longer involved have been removed from the list so that they will not be contacted for information on the CTAG effort.

Name	Organization	Phone	E-MAIL
Sara Ager	USEPA	703-308-3003	ager.sara@epa.gov
Paul Baker	AZ. CES	520-621-4012	pbaker@ag.arizona.edu
Candace Bartholomew	CT. CES	860-570-9010	cbarthol@canr1.cag.uconn.edu
Roger Bender	OH. CES	937-498-7239	shel@agvax2.ag.ohio-state.edu
Bob Brackett	EPA Region 5	312-886-4347	brackett.robert@epa.gov
Liz Braxton	FL. SLA	850-488-3314	braxtol@doacs.state.fl.us
Barry Brennan	USDA/HI. CES	808-956-9208	barry@hpirs.stjohn.hawaii.edu
Amy Brown	MD. CES	301-405-3928 301-405-3913	ab35@umail.umd.edu
Gene Burgess	TN. CES	423-974-7138	gburgess1@utk.edu
Conner Byestewa	CO. River Indian Tribes	520-662-4336	critepo@redrivernet.com
Natalia Clifton	MA. CES	413-545-1044	nclifton@ent.umass.edu
Ed Crow	MD. SLA	410-841-5710	crowea@mda.state.md.us
Suzanne Deatherage	TX. CES	409-845-3849	s-deatherage@tamu.edu
Kathy Dictor	VA. SLA	804-786-3798	kdictor@vdacs.state.va.us
Donnie Dippel	TX. SLA	512-475-1621	ddippel@agr.state.tx.us
Wyatt EagleFeather	Winnebago Tribe of NE.	402-878-3218	-----
Don Eckerman	USEPA	703-305-5062	eckerman.don@epa.gov
Gary Fish	ME. SLA	207-287-2731	gary.fish@state.me.us
Fred Fishel	MO. CES	573-884-6361	fishelf@ext.missouri.edu

Scottie Ford	W.V. SLA	304-558-2209	fordscott@wvlc.wvu.edu
Roger Flashinski	WI. CES	608-263-6358	raflashi@facstaff.wisc.edu
Ronald Gardner	N.Y. CES	607-255-1866	rdg5@cornell.edu
Jeff Goode	AR. SLA	501-225-1598	goodej@aspb.state.ar.us
Mary Grodner	LA. CES	504-388-2180	mgrodner@agctr.lsu.edu
Paul Guillebeau	GA. CES	706-542-9031	pguillebeau@bugs.ent.uga.edu
Julie Haigler	N.C. SLA	919-733-3556	julie_haigler@ncdamail.agr.state.nc.us
George Hamilton	N.J. CES	732-932-9801	hamilton@aesop.rutgers.edu
Rick Hansen	MN. SLA	612-297-2271	Rick.Hansen@state.mn.us
Cathy Haynie	TN. SLA	615-837-5133	ehaynie@mail.state.tn.us
Dean Herzfeld	MN. CES	612-624-3477	deanh@puccini.crl.umn.edu
Jeanne Heying	USEPA	703-308-3240	heyng.jeanne@epa.gov
Pat Hipkins	VA. CES	540-231-3057	phipkins@vt.edu
Win Hock	PA. CES	814-863-0263	wkh1@psu.edu
Pamela Houmere	FL. SLA	904-488-6838	houmerp@doacs.state.fl.us
John Impson	USDA	202-401-4201	jimpson@reeusda.gov
Kim Johnson	MT. SLA	406-444-5400	kimj@state.mt.us
Elizabeth Kane	S.C. CES	864-656-5035	ekane@clemson.edu
Kevin Keaney	USEPA	703-305-7666	keaney.kevin@epa.gov
Gerald Kinro	HI. CES	808-973-9411	kinrog@elele.peacesat.hawaii.edu
John Larson	EPA Region 8	303-312-6030	larson.john@epa.gov
Don Lott	EPA Region 3	215-814-2041	lott.don@epa.gov
John MacDonald	USEPA	703-305-7370	macdonald.john@epa.gov
Pat Marer	CA. CES	916-752-7694	pjmarer@ucdavis.edu
Colonel Robert J. McKenna, USAF, BSC	Armed Forces Pest Mgmt. Board	301-295-7476 or -7477	mckennrj@acq.osd.mil
Chuck Moses	NV. SLA	702-688-1180	cmoses@govmail.state.nv.us
Al Muench	N.Y. SLA	518-457-7482	ahmuench@gw.dec.state.ny.us

Charles Nagamine	HI. CES	808-956-6007	charlie@hpirx.stjohn.hawaii.edu
Norman Nesheim	FL. CES	352-392-4721	onn@gnv.ifas.ufl.edu
Phil Nixon	IL. CES	217-333-6650	nixonp@idea.ag.uiuc.edu
Jerry Oglesby	EPA Region 6	214-665-7563	oglesby.jerry@epa.gov
Bruce Paulsrud	IL. CES	217-244-9646	paulsrud@uiuc.edu
Jack Peterson	AZ. SLA	602-542-3575	jpeter@getnet.com
Reeves Petroff	MT. CES	406-994-3518	ueyap@msu.oscs.montana.edu
Richard Pont	EPA Region 4	404-562-9018	pont.richard@epamail.epa.gov
Richard Pope	IA. CES	515-294-5899	xlpope@exnet.iastate.edu
Mickey Post	EPA HQ-OECA	202-564-4157	post.mickey@epa.gov
Carol Ramsay	WA. CES	509-335-9222	ramsay@wsu.edu
Dave Ramsey	EPA Region 7	573-636-5223	ramsey.david@epa.gov
Carl Rew	IN. SLA	765-494-1588	rewc@isco.purdue.edu
Randy Rivera	TX. SLA	512-463-7717	rrivera@agr.state.tx.us
Bob Rose	USEPA	703-305-6708	rose.roberti@epa.gov
Brian Rowe	MI. SLA	517-373-4905 517-373-1087	roweb@state.mi.us
Dave Scott	PA. SLA	301-587-0508	dmscott@pda005.pda.state.pa.us
John Dean Slates	OH. CES	330-674-3015	slates1@agvax2.ag.ohio-state.edu
Grier Stayton	DE. SLA	302-739-4811	grier@smtp.dda.state.de.us
Brian Swingle	WI. SLA	608-224-4551	swingbj@wheel.datcp.state.wi.us
Andrew Thostenon	N.D. CES	701-231-6274	athosten@nodak.edu
Margaret Tucker	WA. SLA	360-902-2015	mtucker@agr.wa.gov
Edward Vitzthum	NE. CES	402-472-9548	evpr001@unlvm.unl.edu
Mike Walsh	USEPA	703-308-2972	walsh.michael@epa.gov
John Ward	EPA Region 5	312-886-5220	ward.john@epa.gov
Allan Welch	EPA Region 10	206-553-1980	welch.allan@epa.gov
Jerry Whatley	LA. CES	318-475-8812	calcasieu@agctr.lsu.edu

Appendix 2

Summary of CTAG Baseline Assessment

In November 1997, the C&T Assessment Group developed and distributed a baseline assessment of questions to each SLA, CES and territory. Results were compiled by student researchers under the direction of Amy Brown, Pesticide Applicator Training Coordinator at the University of Maryland. In December 1997, the Group convened to draft proposals based on results of the assessment.

The baseline assessment included qualitative questions that attempted to get a national picture of the focus of the state applicator training and certification programs and its strengths and weaknesses. It also included quantitative questions to determine the extent of resources dedicated to the programs. The following is a brief summary of the results. Please note that the answers provided are based on those most frequently repeated and are in no particular order of importance. Not every state gave the answers provided. Also, state responses may appear to contradict each other because of the variety of areas in which states may choose to direct their focus and resources. For example, a state that offers a recertification program based on continuing education may answer that their strength is recertification programs, while a state that requires recertification by examination only may reply that their strength is recertification manuals.

Training Programs: State Pesticide Coordinators said that some strengths of their applicator training programs are:

- high quality training materials targeted to the audience;
- the offering of practical education and training;
- quality, dedicated and diverse staff;
- good cooperation with SLAs;
- readily available training statewide;
- face-to-face training; many collaborations with industry, regulatory and university programs;
- user friendly and the ability to understand the audience;
- an advisory team for each applicator category;
- freedom and flexibility to conduct training as needed.

Weaknesses identified by some programs included:

- limited training materials and no resources or resource staff in minor categories;
- limited funds to hire additional personnel for increasing demands;
- no elective training programs beyond the minimum requirements;
- need greater applicator competency in calibration and application equipment;
- lack of training for new county agents;
- and outdated training materials.

Cooperative Extension Services (CES) identified:

- interactive, computer-aided training;
- interactive video conferencing;
- one-way satellite downlinks;
- hands-on delivery methods;
- and self-study materials as training delivery methods they would like to use for a successful pesticide applicator training program.

To more effectively prepare applicators to safely and effectively use restricted use pesticides, CES would emphasize training on calibration, mixing/loading, protective personal equipment; use hands-on, on-site training for small groups of applicators; provide more category-specific training and increase the length and intensity of training.

CES could accommodate students by providing interpreters or recruiting and training bilingual speakers whose native languages are Spanish, Hmong, Laotian, Native American and South Eastern Asian languages among others. Special accommodations are also made for hearing disabled persons by providing interpreters for training or exams, offering oral exams or special seating for persons with physical disabilities.

Innovative and effective delivery methods include:

- show and tell demonstrations of hands-on application and practice;
- games that bridge language and cultural barriers;
- interactive discussion on labels;
- case studies;
- role-playing;
- kit to match personal protective equipment with labels and appropriate conditions;
- spray drift table demonstration;
- florescent dyes and lighting;
- fumigation air monitoring program
- and presentation on risk, dose and toxicity using yellow food dye.

In some states, private sector contracts are used for:

- developing artwork for publications;
- printing and duplicating services;
- training materials revision;
- manual development;
- editing;
- developing slide scripts;
- migrant worker and structural pest control training;
- Spanish language assistance for migrant WPS survey;
- pesticide safety message in conjunction with primary health care outreach personnel;
- category training;
- industry speakers for grain fumigation and wood preservative training.

In some states, the results of applicator surveys are used by some CES to:

- address application/misuse problems in bulletin topics;
- identify needed areas to pursue grant funding and to evaluate program content
- and determine private applicator satisfaction with the training and certification process and program.

Miscellaneous comments from some CES were:

- one size does not fit all;
 - some extension directors need to understand the impact and importance of PAT;
- the program needs...
- to increase communication;
 - support for training of non-restricted use pesticide users;
 - a national policy on minimum test scores and recertification credits;
 - assistance with the issue of farmers being under attack even when legally applying pesticides;
 - to support more regional training programs;
 - to seek out the best training presentations;
 - to seek out the best curriculum approaches
 - to share information among trainers around the country.

Certification/Recertification Programs: Some Pesticide State Lead Agencies said that strengths of their certification/recertification programs are:

- a close working relationship with CES and EPA;
- relatively new training materials for private and commercial applicators;
- knowledgeable, qualified and experienced personnel;
- incorporation of issues on inspections and complaints;
- some applicators are informed on what they need to know;
- and some programs are tailored to specific applicator categories.

According to some Pesticide State Lead Agencies, weaknesses included:

- outdated training materials;
- lack of expertise in certain areas of certification;
- guidance needed on validation and writing of exams;
- confusion of certification types and category requirements;
- need more certification and recertification training courses;
- lengthy process for regulatory changes;
- loss of or limited technical staff;
- lack of public awareness of program and its benefits;
- need additional test sites and dates;
- and ability to ensure applicator competency.

To more effectively prepare applicators to safely and effectively use restricted use pesticides, some pesticide State Lead Agencies responded that they would:

- require testing for private applicators;
- develop a practical element for exams;
- conduct field evaluations of new applicators;
- use the exam validation process;
- provide electronic feedback on exams for students;
- provide solid and prompt enforcement;
- address reciprocity needs;
- expand the scope of the program and elevate its importance.

Pesticide State Lead Agencies establish new categories by regulation, rule, policy or law and the process can take from six months to three years. Exams are reviewed by SLA, CES, industry or subject matter experts. Exam content is determined by study materials; EPA standards; state regulations; practical knowledge needed; a survey of the regulated community or interviews with focus groups. Feedback is given to testers upon request, through one-on-one conversation with staff, by onsite test scoring. Exam cut-off scores were determined by SLA staff, policy, or joint SLA/CES. The weighting of exam questions is determined by the importance of the topic, determined subjectively by SLA/CES or all questions carry the same weight. Concerns with reciprocity are loopholes; verification of certification; difference in state laws and regulations; difference in state determination of competency; the timing of agreements and agreements are out of date.

Some SLAs use surveys of applicators to change the focus of training and to revise exam questions. Some SLAs identified contractor use for computer services, printing, training, study materials development; exams; certification renewal mailing; industry trainers; automated phone system for test scores, identification numbers and expiration dates.

Miscellaneous comments from some SLAs included:

- FIFRA needs to be revised;
- we need to look at the big picture of what we should be doing and how to do it with finite resources; the C&T Assessment Group needs to survey applicators prior to making program direction changes;
- there needs to be more opportunities for SLA/CES to work together;
- programs need methods for dealing with disabilities;
- we need to share technology successes among states;
- EPA should continue to develop manuals and exams for unique categories;
- we need a national reciprocity program;
- and national standards for continuing education units and national test validation procedures need to be developed.

SLA and CES Cooperation: State Lead Agencies and Cooperative Extension Services identified that they cooperate on joint training programs and field days; planning, program approval and revision; annual in-service training; WPS workshops and programs; general public, homeowner and youth education; joint publications for homeowners; material development and revision; review of materials for accuracy; newsletters; exam development and sessions; policy development; certification issuance; award of recertification credits; and Internet/Web site development among others.