

## Professional Continuing Education for Commercial Pesticide Applicators: A Case Study in Standard Setting

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### Abstract

Indiana's pesticide regulatory agency, the Office of Indiana State Chemist, offers commercial pesticide applicators an option of renewing certification by re-testing or through continuing education. The program has operated under policy during its 30-year history and was only recently drafted into rule. The most significant hurdle to rule development was determining an appropriate number of recertification training hours for each applicator category. A successful outcome was achieved through democratic negotiation with the regulated community based on the results of a category-by-criteria rating activity that rationally determined the number of training hours.

**Keywords:** recertification, continuing certification, continuing credit hour, standard setting

### A Rule 30 Years in the Making

Indiana's continuing certification program for commercial pesticide applicators began in 1977 "...as a means of encouraging the certified commercial applicator to stay abreast of changes pertinent to his work and to increase his level of professional competency while earning the privilege of automatic [certification] renewal ... (Blessing, 1987)." The fledgling program was initiated as an inter-office agreement between the Office of the Indiana State Chemist (OISC) pesticide administrator, and the Purdue University Cooperative Extension Service (CES) pesticide training coordinator (Purdue University Interoffice Memorandum, 1977). The agreement, in effect a de facto policy statement, offered commercial applicators the option of renewing

their certification by either re-testing or participation in a continuing education program. The agreement specified a three-year certification term and identified the number of recertification training hours required per category for those applicators electing to recertify by continuing education. The training hour requirements were established in 1977, over the course of several meetings, by agreement between Purdue CES specialists and OISC personnel. Their decisions were based on recertification training programs in other states, adjusted for circumstances deemed specific to Indiana (L.O. Nelson, personal communication, 2008). Initially, the program was considered somewhat experimental and subject to change (Purdue University Interoffice Memorandum, 1977). In fact, by

1980, administrative expenses, cost to the regulatory community, and the inability of CES to meet training demands necessitated substantive changes that extended the certification term to five years and reduced the total credit hour requirements (Indiana State Chemist and Seed Commissioner Memorandum, 1980).

From that point on, Indiana's commercial pesticide applicator recertification program evolved into an important OISC activity with significant implications for the commercial pesticide applicator community. As a result, OISC tried in 1986 and 2003 to codify program details for purposes of rule promulgation. However, neither effort moved beyond preliminary draft stages due to shifting regulatory priorities in Indiana and concerns that the United States Environmental Protection Agency (EPA) was working on federal initiatives that might impact state rules (David E. Scott, personal communication, 2008).

Failure to finalize a recertification rule for commercial applicators was never an impediment to cultivating an effective recertification program. State law permitted OISC to implement its continuing credit hour program by policy (Indiana Code 15-16-45[c]). And this approach worked, in practice, for three decades due to the close cooperation between OISC and Purdue Pesticide Programs (representing CES), which met regularly to iron out confusing or contentious recertification-related issues. The program was also successful because the regulated community embraced the concept of

recertification training as an important professionalizing activity. However, because the recertification program policy lacked clear procedural specifications, concerns were raised about fallible institutional memory and the potential for inconsistent or unfair application of recertification requirements (David E. Scott, personal communication, 2008). These concerns led to renewed discussions between Purdue Pesticide Programs and OISC about placing the 30-year recertification policy into the rule-making process again, a project initiated in 2007 (David E. Scott, personal communication, 2008).

#### **Rule-making and Democratic Negotiation**

OISC convened an informal recertification committee of University Extension specialists and commercial pesticide application industry representatives in April 2007, "...to formalize and standardize procedures for implementation of the CCH [continuing credit hour] program" (Office of Indiana State Chemist, 2007a). Committee members were selected based on their familiarity with OISC's current recertification program and their representation of various commercial pesticide application industries.

The committee fully supported the concept of continuing education as the preferred method of certification renewal, with re-testing retained as an option. Committee members unanimously regarded recertification training as the ideal means of enhancing jobholder knowledge. The committee also concluded that the

current five-year certification term was appropriate and that mandatory training topics were unnecessary. Much of the discussion centered on OISC expanding continuing credit subject matter areas to include non-chemical approaches to pest management and topics relating to consumer protection. OISC agreed to approve these additional topics because they bore on the ethic of reduced pesticide use (Office of Indiana State Chemist, 2007a).

Expanding the availability of topics for continuing education credit consequently led to a conversation about increasing the number of credit hours required to recertify (i.e., if more continuing credit hours are available, applicators should be obligated to obtain more of them). In the ensuing discussion, the committee took a traditional approach to standard setting by applying a variety of ad hoc criteria to determine the appropriate number of continuing credit hours per category (Leo Reed, personal communication 2007).

The 2007 committee meeting resulted in a series of recommendations to move Indiana's recertification program from policy to rule, including a substantial increase in the required number of continuing credit hours for most categories (Office of Indiana State Chemist, 2007a). The recommendations were presented to the Indiana Pesticide Review Board in July 2007. The Board, a 20-member, governor-appointed panel created by Indiana law to develop pesticide policy and regulations, requested that OISC develop the recommendations into a draft rule in time for the next Board

meeting (Indiana Pesticide Review Board, 2007a). A draft rule was presented to the Board in September 2007, which prompted a call for a modification, in part based on a concern that "...if the number of required CCHs is going to be increased for each category, there needs to be a rationale for the relative numbers" (Indiana Pesticide Review Board, 2007b).

OISC's recertification committee arranged to meet again in November 2007 to respond to the Indiana Pesticide Review Board's request to revisit the continuing credit hour issue. Prior to the meeting date, OISC charged committee members with determining the number of continuing credit hours appropriate for any commercial applicator in one year, and also adjusting that number up or down for each category based on specific criteria. (Leo Reed, personal communication, 2007).

The committee initially discussed eight continuing credit hours (i.e., one day's training) per year as a basis from which to determine appropriate numbers for each category. It was quickly pointed out that a day's training is typically less than eight hours, after considering the time spent on meals, breaks, procedural discussions, and completing necessary recertification paperwork (Office of Indiana State Chemist, 2007b). Four hours per year, as a minimum, was tentatively agreed to and a rating matrix was distributed to each committee member to systematically, and through open dialogue, rate each category on five criteria including:

1. How often does the typical

- applicator apply pesticides?
2. How many different types of pesticides are used?
  3. What is the potential for human or environmental harm?
  4. How complex is [sic] the equipment and techniques necessary for application?
  5. What is the potential for

technological change?  
(Anonymous, 2007).

A four-hour-per-year minimum immediately proved problematic. Committee members recognized that establishing a minimum number of continuing credit hours precluded the possibility of downward adjustments, in the event that was deemed appropriate. The four-hour-per-year minimum was changed to a median,

**Table 1.** Continuing Credit Hour (CCH) Results Using the Rating Matrix with Four Continuing Credit Hours as a Median

Category	Application Frequency	Application Variety	Application Complexity	Potential Threat to People, Environment, Property	Potential for Technological Change	Rank Value <sup>1</sup>	CCHs per Year <sup>2</sup>	CCHs per Five-year Term
1 Agricultural Pest Management	Medium (2)	High (3)	Low (1)	High (3)	High (3)	12	5	25
2 Forest Pest Management	Low (1)	Low (1)	Low (1)	Low (1)	Low (1)	5	3	15
3a Ornamental Pest Management	Medium (2)	Medium (2)	High (3)	Low (1)	Low (1)	9	4	20
3b Turf Pest Management	High (3)	High (3)	Medium (2)	Medium (2)	Low (1)	11	5	25
4 Seed Treatment	Medium (2)	Low (1)	Low (1)	Low (1)	Low (1)	6	3	15
5 Aquatic Pest Management	Medium (2)	Low (1)	Medium (2)	High (3)	Low (1)	9	4	20
6 Industrial Weed Management	High (3)	Low (1)	Medium (2)	Medium (2)	Low (1)	9	4	20
7a Industrial, Institutional, Structural, and Health-Related Pest Management	High (3)	High (3)	High (3)	Medium (2)	Low (1)	12	5	25
7b Termite Control	Medium (2)	Low (1)	High (3)	Medium (2)	Low (1)	9	4	20
7d Fumigation	Medium (2)	Low (1)	High (3)	High (3)	Medium (2)	11	5	25
8 Community-Wide Mosquito Control	Medium (2)	Low (1)	High (3)	Medium (2)	Low (1)	9	4	20
11 Aerial Application	Medium (2)	High (3)	High (3)	High (3)	Low (1)	12	5	25
12 Wood Damaging Pest Inspection	Low (1)	Low (1)	Low (1)	Medium (2)	Low (1)	6	3	15

<sup>1</sup> Rank value for each category is the sum of its criteria ratings (across rows).

<sup>2</sup> Rank value of 5-6 = 3 CCHs per year, rank value of 7-9 = 4 CCHs per year, and rank value of 10-12 = 5 CCHs per year.

and the rating activity continued to evolve during the course of the meeting. Using the rating matrix and a four-hour-per-year median,

The committee rated each applicator category either [sic] low, medium, or high on each of the five criteria. A value of one was assigned to a low rating, two to a medium rating, and three to a high rating. The values were then summed across all five criteria to produce a ranking for each category. Natural breaks were observed at ranks of 5-6, 7-9, and 10-12. The median number of CCHs per year (4) was assigned to categories ranked 7-9, three CCHs per year were assigned to categories ranked 5-6, and 5 CCHs per year were assigned to categories ranked 10-12 (Anonymous, 2007).

The operating assumption was that higher-ranked categories required more recertification training, and was reflected in an increased number of continuing credit hours. This resulted in a 15-hour continuing credit requirement during the five-year certification term (3x5) for categories ranked 5-6, 20-hours in five years (4x5) for categories ranked 7-9, and 25-hours in five years (5x5) for categories ranked 10-12 (Table 1). For example, the rating values for each of the five criteria for Category 1, Agricultural Pest Management, summed to 12. This value falls into ranks 10-12 and, consequently Category 1 was assigned five continuing credits per year (or 25 credits per the five-year certification term). A special point bears mention. This approach was advanced in the absence of any Federal guidance or

through any refereed literature on methods to guide recertification standard setting via continuing education. Federal guidelines on commercial applicator certification are silent on this subject. An early document, *Guidance for Developing State Programs for Continuing Certification of Commercial Pesticide Applicators* (EPA/SFIREG Certification and Training Task Force, 1985), stated only that, "In practice, each State Lead Agency, in cooperation with its CES will need to determine the number of units required to be accumulated in order to renew certification (p. 17)."

Likewise, a literature review of standard setting among professional occupations revealed little about the mechanics of determining recertification hours. Whatley (2005) did, however, examine the social processes underlying the establishment of a continuing education program and identified the concept of democratic negotiation as a particularly important driving force. Whatley's observation became obvious in the present context when several committee members expressed disapproval with the recommended continuing credit hours for categories in which they were certified.

### **Industry Pushback**

A revised draft rule with the proposed credit hours was resubmitted to the Indiana Pesticide Review Board at its December 2007 meeting (Indiana Pesticide Review Board, 2007c). Industry members in the audience immediately expressed disapproval about increasing the numbers of continuing credit hours

for their specific categories. They argued that increased recertification credit hours would cause economic hardship and were not warranted by OISC's own enforcement data (Indiana Pesticide Review Board, 2007c). The Board voted unanimously not to move the draft into formal rule making, sending it back to committee again to continue working with industry groups to reach consensus on the appropriate number of continuing credit hours per category (Indiana Pesticide Review Board, 2007c).

OISC met with representatives from various industry associations to reconcile industry concerns with the State's need to document a rational means of establishing continuing credit hour requirements (Leo Reed, personal communication, 2008). A resolution was reached in early 2008 during a formal meeting with one of the most vocally critical industry associations. This association had drafted its own criteria for establishing CCHs (Anonymous, n.d.). It was observed during the course of the meeting that the CCHs recommended by the industry association were remarkably similar to what OISC's recertification committee would have stipulated had the median number of hours (four) been used as a maximum. A compromise agreement was quickly reached to use OISC's previous committee ratings, but with four credit hours per year as a maximum rather than a median (Leo Reed,

personal communication, 2008). This yielded 10-, 15-, or 20-credit hours per five-year certification term, depending on the category's matrix-based ranking. Again using Category 1, Agricultural Pest Management, as an example, its rating values for each of the five criteria still sum to 12 and this value still falls into [the highest] ranks 10-12. Now, however, Category 1 is assigned four continuing credit hours per year as the maximum number (or 20 credits per the five-year certification term).

The amended recertification draft was presented to the Indiana Pesticide Review Board in February 2008. OISC discussed the results of its industry meetings and described again its methodology for arriving at an appropriate number of credit hours based, now, on four hours per year as a maximum (Table 2). OISC also presented the results of a survey it had conducted regarding the recertification requirements of 30 other state pesticide regulatory agencies. Responding states were unable to provide specific details on how their continuing credit hours were determined, but the results showed a mean annual continuing credit hour requirement of 4.89 hours, with a range of two to 10 hours per year (Anonymous, 2008). After discussion among Board members, a motion was accepted to move the recertification draft into the formal rule-making process (Indiana Pesticide Review Board, 2008).

**Table 2.** The Developmental Progression of Continuing Credit Hour Numbers in Indiana from 2006-2008

Category	2006: Required Hours	2007: Proposed Hours by Traditional Committee- Based Approach	2007: Proposed Hours by Rating Matrix With a 4-Hour Per Year Median	2008: Board- Approved Hours by Rating Matrix With a 4-Hour Per Year Maximum
1 Agricultural Pest Management	18	30	25	20
2 Forest Pest Management	12	30	15	10
3a Ornamental Pest Management	18	30	20	15
3b Turf Pest Management	18	30	25	20
4 Seed Treatment	6	6	15	10
5 Aquatic Pest Management	12	24	20	15
6 Industrial Weed Management	12	24	20	15
7a Industrial, Institutional, Structural, and Health-Related Pest Management	18	24	25	20
7b Termite Control	12	24	20	15
7d Fumigation	12	24	25	20
8 Community-Wide Mosquito Control	12	24	20	15
11 Aerial Application	14	24	25	20
12 Wood Damaging Pest Inspection	6	12	15	10

### **A Rational, Reasonable, and Reproducible Method**

The method developed by OISC to identify an appropriate number of continuing credit hours per commercial applicator category yielded results close to what had already been in play, raising the question, "What's wrong with the status quo?" The answer lies in recognizing that a small number of regulatory and university personnel

established the status quo by informal means and absent any rational basis. OISC's method arrives at continuing credit numbers systematically, with due diligence, and by free debate among subject matter experts representing private industry, OISC, and the Cooperative Extension Service. This method, as with any judgmental standard-setting approach, is admittedly open to a charge of arbitrariness (i.e., different

committees might establish different numbers). However, it does withstand the more serious charge of capriciousness, a charge that is obviously applicable in instances where numbers are simply assigned by regulatory decree. It is also a reasonable method. Evaluation criteria (i.e., a rating matrix) facilitated productive, focused committee discussions yielding useable results in the course of two days of meetings. Much of the year spent moving OISC's recertification policy to rule was dedicated to managing political and social difficulties (e.g., Board requests and industry skepticism). And, after some trial and error, the methodology is now very reproducible. OISC anticipates periodic, five-year reviews for all commercial categories to ensure that continuing certification hour requirements remain current. Emerging categories, new technologies and enforcement trends may necessitate even more frequent reviews for individual categories.

### **Recommendations**

State pesticide regulatory agencies planning to develop a continuing education recertification program, or those reviewing their recertification requirements, can benefit from this approach to establishing the number of credit hours per category. Open communication, careful committee selection, and a category-by-criteria rating matrix were the essential elements of this process.

1. Clearly articulate the reasons that necessitate implementing or changing a recertification program (e.g., a need for a rational basis to support the

number of required, continuing certification credits).

2. Listen very carefully for dissent at all stages of the process. It is far easier to encourage debate and resolve problems at the committee stage than when findings are presented to larger groups.
3. Anticipate that enforcement trends will be raised as the primary argument either in support of, or against, the need to change a recertification program. However, enforcement cases are unlikely to correlate in meaningful ways with continuing education programs, and unanticipated correlations are even possible (McCray, 2006). If the regulated community agrees that recertification by continuing education is the best means of encouraging jobholders to enhance their professional knowledge and skills, then enforcement issues cannot be the sole criteria on which to base an appropriate number of continuing credit hours.
4. Select a committee that represents all affected industries. A non-random sample of qualified individuals is entirely adequate for this purpose. Remember that one individual may capably represent several applicator categories. Consider including Cooperative Extension Service personnel who have industry experience or serve as representatives on various industry association boards.
5. Maintain the confidentiality of committee members as a means



to encourage them to speak freely as individuals. Allow them to make decisions for themselves as to how to communicate proceedings to their interest groups and refrain from including names in officially published reports.

6. Develop a matrix of categories and criteria to facilitate and record committee consensus. Use Table 1 as a guide, revised to include other categories and other criteria as needed. The interaction between a well-selected committee and that matrix is what permits a rational response to the question, "How much state-required recertification training is enough?"

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