

**Title 2—DEPARTMENT OF
AGRICULTURE
Division 70—Plant Industries
Chapter 25—Pesticides**

PROPOSED AMENDMENT

2 CSR 70-25.110 Standards of Competence for the Certification of Commercial Applicators, Noncommercial Applicators, [and] Public Operators, and Noncertified RUP Applicators. The department is amending the rule title, amending sections (1), (2), and (3), and adding section (4).

PURPOSE: This amendment updates the standards of competence for certain pesticide applicators.

(1) Commercial applicators, noncommercial applicators, and public operators shall pass an examination to demonstrate competence in the use of pesticides based on the general standards of competence and shall pass an examination based on the specific standards of competence for at least one (1) of the certification categories listed in 2 CSR 70-25.100.

[(2) General Standards of Competence for All Certification Categories.

(A) The applicant shall demonstrate a practical knowledge of the format and terminology of pesticide labels and labeling, and an understanding of instructions, warnings, terms, symbols and other information commonly appearing on pesticide labels. The applicant shall demonstrate a practical knowledge of the classification of pesticides as to general or restricted use and must understand the necessity for the use of a pesticide in a manner consistent with its labeling.

(B) The applicant shall demonstrate a practical knowledge of the factors of pesticide safety including pesticide toxicity, hazard to man, and common exposure routes. The applicator must demonstrate a practical knowledge of the types and causes of pesticide accidents, a practical knowledge of the precautions necessary to guard against injury to applicators and other individuals in or near treated areas; a practical knowledge of the need for, and the use of, protective clothing and equipment; a practical knowledge of symptoms of pesticide poisoning; and a practical knowledge of first aid and other procedures to be followed in case of pesticide accidents. The applicator shall demonstrate a practical knowledge of proper identification, storage, transport, handling, mixing procedures and disposal methods for pesticides and used pesticide containers including precautions to be taken to prevent children from having access to pesticides and pesticide containers.

(C) The applicant shall demonstrate a practical knowledge of the environment, including potential environmental consequences of the use, and the misuse, of pesticides as may be influenced by such factors as weather and other climatic conditions; as may be influenced by types of terrain, soil and other substrate; as may be influenced by the presence of fish, wildlife and other nontarget organisms; and as may be influenced by drainage patterns.

(D) The applicant shall demonstrate a practical knowledge of pests and pest recognition, including the common features of pest organisms and the characteristics of pest damage as a means of pest recognition; and a practical knowledge of pest development, including the biology and habits of pests as may be relevant to problem identification in pest control.

(E) The applicant shall demonstrate a practical knowledge of pesticides, including types of pesticides, types of pesticide formulations, compatibility, synergism, persistence and the toxicity of various pesticides and pesticide formulations to animals and plants; a practical knowledge of the hazards and residues associated with pesticide use; a practical knowledge of factors which influence pesticide effectiveness or lead to such problems as resistance to pesticides; and a practical knowledge of dilution procedures.

(F) The applicant shall demonstrate a practical knowledge of pesticide equipment, including the types of equipment and the advantages and limitations of each type, and a practical knowledge of the use, maintenance and calibration of pesticide equipment.

(G) The applicant shall demonstrate a practical knowledge of pesticide application techniques, including methods and procedures used to apply various formulations of pesticide solutions and gases, together with a knowledge of which application technique to use in a given situation; a practical knowledge of the relationship of discharge and placement of a pesticide to the proper use of the pesticide as well as to the unnecessary use of the pesticides; and a practical knowledge of the prevention of pesticide drift and of pesticide loss into the environment.

(H) The applicant shall demonstrate a practical knowledge of the applicable state and federal laws and regulations.]

(2) Noncertified RUP applicators may pass an examination to demonstrate competence in the use of restricted use pesticides based on the general standards of competence found in section 3 of this rule.

[(3) Specific Standards of Competence for Certification Categories.

(A) Category 1—Agricultural Pest Control.

1. Subcategory a—Agricultural Plant Pest Control. The applicant shall demonstrate a practical knowledge of the crops to which pesticides will be applied and a practical knowledge of the specific pests of those crops. A practical knowledge is required concerning potential soil and water problems, preharvested intervals, reentry intervals, phytotoxicity; and concerning the potential for environmental contamination, the potential for injury to nontarget plants and animals, and the potential for causing community problems resulting from the use of pesticides in agricultural areas.

2. Subcategory b—Agricultural Animal Pest Control. The applicant who applies pesticides directly to animals, or to the harborages of animals, must demonstrate a practical knowledge of these animals and their associated pests. A practical knowledge also is required concerning specific pesticide toxicity to animals and concerning the potential for illegal pesticide residues when these animals are to be used for human or animal food. The applicant also must demonstrate a practical knowledge of pesticide formulations and application techniques as they apply to animals of various ages and animals under various types of stress, and a practical knowledge concerning the extent of treatment of those animals.

(B) Category 2—Forest Pest Control. The applicant shall demonstrate a practical knowledge of the types of forest, forest nurseries and seed production and a practical knowledge of the pests involved. The applicant shall possess a practical knowledge of the cyclic occurrence of certain pests, and a practical knowledge of specific population dynamics as a basis for programming pesticide applications. Applicants shall demonstrate a practical knowledge regarding nontarget plants and animals and their vulnerability to pesticides. The applicator must demonstrate a practical knowledge of control methods which will minimize the possibility of secondary problems such as the unintended effects on wildlife and which will minimize problems of pollution. The applicator must demonstrate a practical knowledge of specialized equipment, especially as it relates to meteorological factors and adjacent land use.

(C) Category 3—Ornamental and Turf Pest Control. The applicant shall demonstrate a practical knowledge of pesticide problems associated with the production and maintenance of ornamental trees, shrubs, plantings and the production and maintenance of turf. The applicant shall demonstrate a practical knowledge concerning potential phytotoxicity (chemical burn of plant tissue) due to a wide variety of plant material involved. The applicant shall demonstrate a practical knowledge concerning pesticide drift and a practical knowledge concerning the persistence of pesticides beyond the intended period of pest control. Because of the frequent proximity of human habitations to application activities the applicant shall demonstrate a practical knowledge of application methods which will minimize or prevent hazards to humans, pets and other domestic animals.

(D) Category 4—Seed Treatment. The applicant shall demonstrate a practical knowledge of the types of seeds which require chemical protection against pests and a practical knowledge of factors such as seed coloration, pesticide carriers and surface active agents which influence pesticide binding and may affect germination. The applicant shall demonstrate a practical knowledge of the hazards associated with the handling, sorting and mixing of treated seed. The applicant shall demonstrate practical knowledge of the problems regarding the misuse of seed treated with pesticides, such as the introduction of treated seed into food and feed channels. The applicant shall demonstrate a practical knowledge concerning the proper disposal of unused treated seed.

(E) Category 5—Aquatic Pest Control. The applicant shall demonstrate a practical knowledge of the secondary effects which can be caused by improper application rates, incorrect formulations and the faulty application of those pesticides used in this category. The applicant shall demonstrate a practical knowledge of various water use situations and the potential for downstream adverse effects. The applicant shall demonstrate a practical knowledge of the potential adverse effects of pesticides on nontarget plants, fish, birds, beneficial insects and other organisms which may be present in aquatic environments. The applicant shall demonstrate a practical knowledge of the principles of limited area applications.

(F) Category 6—Right-of-Way Pest Control. The applicant shall demonstrate a practical knowledge concerning the wide variety of environments involved in right-of-way pest control. The applicant shall demonstrate a practical knowledge of problems of pesticide run off, pesticide drift and problems of excess foliage destruction. The applicant shall demonstrate a practical knowledge concerning the recognition of target pest organisms involved in right-of-way pest control. The applicant shall demonstrate a practical knowledge of herbicides and the need for containing these pesticides within the right-of-way area. The applicant shall demonstrate a practical knowledge concerning the impact of pesticides on adjacent areas and communities.

(G) Category 7—Structural Pest Control.

1. *Subcategory a—General Structural Pest Control.* The applicant shall demonstrate a practical knowledge of a wide variety of structural pests, including the life cycle and habits of these pests. The applicant shall demonstrate a practical knowledge concerning the types of formulations appropriate for the control of these pests. The applicant shall demonstrate a practical knowledge concerning the application of pesticides in a manner to avoid damage to the structure, contamination of food, contamination of the structure and surrounding area and exposure of people and pets. The applicant shall demonstrate a practical knowledge of the specific factors which may lead to a hazardous condition, including continuous exposure in the various situations encountered in this category. The applicant must also demonstrate practical knowledge of environmental conditions relating to outdoor applications of pesticides used in this category.

2. *Subcategory b—Termite Pest Control.* The applicant shall demonstrate a practical knowledge of termites, including their life cycle and habits and a practical knowledge of termite damage. The applicant shall demonstrate a practical knowledge of various associated wood-destroying organisms, including, but not limited to, powder post beetles, carpenter ants and other wood destroying insects. The applicant shall demonstrate a practical knowledge concerning undue exposure to humans, domestic pets and other nontarget organisms; as well as a practical knowledge concerning potential contamination of the environment and associated problems.

3. *Subcategory c—Fumigation Pest Control.* The applicant shall demonstrate a practical knowledge concerning a wide variety of pests associated with those structures subject to fumigation. The applicant shall demonstrate a practical knowledge regarding the use of the various fumigants, including application techniques, and the use of specialized safety equipment and specialized application techniques. The applicant shall demonstrate a practical knowledge concerning the use of fumigants in a manner to avoid contamination of food and surrounding areas and to prevent exposure of humans and pets. The applicant shall demonstrate a practical knowledge of the specific factors which may lead to a hazardous condition, including continuous exposure in the various situations encountered in this category. The applicant also must demonstrate practical knowledge of environmental conditions relating to outdoor applications of pesticides used in this category.

(H) *Category 8—Public Health Pest Control.* The applicant shall demonstrate a practical knowledge of vector-disease transmission as it relates to, and influences, pesticide application problems. The applicator shall demonstrate a practical knowledge concerning a wide variety of pests involved in public health pest control, including the life histories and habits of these pests. The applicant shall demonstrate a practical knowledge concerning a great variety of environments which range from streams to those conditions found in buildings. The applicant shall demonstrate a practical knowledge of the importance of, and employment of, such nonchemical control methods as sanitation, waste disposal and drainage.

(I) *Category 9—Regulatory Pest Control.* The applicant shall demonstrate a practical knowledge of regulated pests, applicable laws pertaining to pest quarantine and other forms of pest regulation and the potential impact on the environment of pesticides used in suppression and eradication programs. The applicant shall demonstrate a practical knowledge concerning factors influencing introduction, spread and population dynamics of relevant pests. The applicant shall demonstrate a practical knowledge which shall extend beyond that required by the immediate duties of the applicator since the services of the applicator frequently are required in other areas of the country where emergency measures are invoked to control regulated pests and where individual judgements must be made in new situations.

(J) Category 10—Demonstration and Research Pest Control. The applicant shall meet comprehensive standards reflecting a broad spectrum of pesticide uses. The applicant shall demonstrate a practical knowledge of problems, pest and population levels occurring in each demonstration or research situation required. The applicant shall demonstrate an understanding of pesticide-organism interactions and the importance of integrating pesticide use with other control methods. The applicant shall not only demonstrate competence in the category of Demonstration and Research Pest Control but also shall demonstrate the category competencies which apply to the area of expertise in which the applicant shall conduct demonstrations and research.

(K) Category 11—Wood Products Pest Control. The applicant shall demonstrate a practical knowledge of wood degradation and a general knowledge of pesticides used to prevent or control the degradation. The applicant shall demonstrate an understanding of the pesticides used to preserve wood including a knowledge of solution formulations, application techniques, hazards to man, domestic animals and the environment and the safe and proper means of container storage and disposal.]

(3) General Standards of Competence for the CORE examination. The applicant shall demonstrate a practical knowledge of:

(A) Pesticide labels and labeling, including-

1. The format and terminology of pesticide labels and labeling, and an understanding of instructions, warnings, terms, symbols, and other information commonly appearing on pesticide labels.

2. The classification of pesticides as to general or restricted use and that a pesticide may be unclassified.

3. Understanding labeling requirements relating to supervising noncertified applicators who are working under the direct supervision of a certified applicator.

4. Understanding label requirements that a certified applicator must be physically present at the site of the application.

5. Recognizing and understanding the difference between mandatory and advisory labeling language.

6. Understanding that they must comply with all use restrictions and directions for use found on the label and labeling, including being certified in the certification category appropriate to the type and site of application and that it is a violation of state and federal law to use any registered pesticide in a manner inconsistent with its labeling.

(B) Applicator pesticide safety, including-

1. Pesticide toxicity, hazards to man, and common exposure routes.

2. The types and causes of pesticide accidents and the precautions necessary to guard against injury to applicators and other individuals in or near treated areas.

3. Understanding the different natures of the risks of acute toxicity, as well as the long-term effects of pesticides.

4. The need for, and the use of, protective clothing and equipment.

5. Symptoms of pesticide poisoning.

6. First aid and other procedures to be followed in case of pesticide accidents.

7. Proper identification, storage, transport, handling, mixing procedures, and disposal methods for pesticides and used pesticide containers including precautions to be taken to prevent children from having access to pesticides and pesticide containers.

(C) Environment, including-

1. Potential environmental consequences of the use, and the misuse, of pesticides as may be influenced by such factors as weather and other climatic conditions; types of terrain, soil, and other substrate; the presence of fish, wildlife, and other nontarget organisms; and drainage patterns.

(D) Pests and pest recognition, including-

1. The common features of pest organisms and the characteristics of pest damage as a means of pest recognition.

2. Pest development, including the biology and habits of pests, as may be relevant to problem identification in pest control.

3. Correctly selecting the proper pesticide product(s) for effective pest control and verifying the labeling does not prohibit the use of the product for the control of the target pest(s) or use site.

(E) Pesticides, including-

1. Types of pesticides, types of pesticide formulations, compatibility, synergism, persistence, and the toxicity of various pesticides and pesticide formulations to animals and plants.

2. The hazards and residues associated with pesticide use.

3. Factors which influence pesticide effectiveness or lead to such problems as resistance to pesticides.

4. Dilution procedures.

(F) Pesticide equipment, including-

1. The types of equipment and the advantages and limitations of each type.

2. The use, maintenance, and calibration of pesticide equipment.

3. Drift prevention and pesticide loss into the environment.

(G) Application techniques, including-

1. Methods and procedures used to apply various formulations of pesticides and the application technique to use in a given situation.

2. Understanding how selection of application method and use of a pesticide may result in proper use, unnecessary or ineffective use, and misuse.

3. The prevention of pesticide drift and of pesticide loss into the environment.

4. Which application method to use in a given situation and that use of a fumigant or aerial application requires additional certification.

(H) State and federal pesticide laws and regulations.

(I) Responsibility of certified applicators supervising noncertified applicators, including-

1. Understanding and complying with all regulations for certified applicators who supervise noncertified applicators using general use and restricted use pesticides and the regulatory requirements for recordkeeping for noncertified applicators who have demonstrated competency in the safe use of all pesticides.

2. Providing use-specific instructions to noncertified applicators prior to using general use and restricted use pesticides under the direct supervision of a certified applicator.

3. Pertinent state and federal pesticide laws and regulations for explanation to noncertified applicators who use general use and restricted use pesticides under the direct supervision of certified applicators.

(J) Professionalism, including-

1. Understanding of the importance for maintaining chemical security for all pesticides and how to communicate information about pesticide exposure and risks with the public.

2. Pesticide product stewardship.

(4) Specific Standards of Competence for Certification of Commercial Applicator, Noncommercial Applicator, and Public Operator Categories. The applicant shall demonstrate a practical knowledge of at least one of the following categories:

(A) Category 1—Agricultural Pest Control.

1. Subcategory a—Agricultural Plant Pest Control.

A. The crops to which pesticides will be applied.

B. The specific pests of those crops.

C. Potential soil and water problems, preharvest intervals, reentry intervals, phytotoxicity due to a wide variety of plants to be protected, drift, persistence beyond the intended period of pest control, potential for environmental contamination, potential for injury to nontarget plants and animals, and potential for causing community problems resulting from the use of pesticides in agricultural areas.

2. Subcategory b—Agricultural Animal Pest Control.

A. Animals or the harborages of animals to which the pesticides are applied and their associated pests.

B. Specific pesticide toxicity to animals and the potential for illegal pesticide residues when these animals are to be used for human or animal food.

C. Hazards associated with pesticide formulations and application techniques as they apply to animals of various ages, animals under various types of stress, and the extent of treatment.

(B) Category 2—Forest Pest Control.

1. The types of forest, forest nurseries, seed production, and the pests involved.

2. The cyclic occurrence of certain pests.

3. Specific population dynamics as a basis for programming pesticide applications.

4. Nontarget plants and animals and their vulnerability to pesticides.

5. Control methods which will minimize the possibility of secondary problems such as the unintended effects on wildlife and which will minimize problems of pollution.

6. Specialized equipment, especially as it relates to meteorological factors and adjacent land use.

7. Relevant organisms causing harm and their vulnerability to the pesticides to be applied.

8. How to determine when pesticide use is proper.

9. The selection of application method.

10. Potential for phytotoxicity due to a wide variety of plants to be protected, drift, and persistence beyond the intended period of pest control.

(C) Category 3—Ornamental and Turf Pest Control.

1. Pesticide problems associated with the production and maintenance of ornamental trees, shrubs, plantings, and the production and maintenance of turf.

2. Potential phytotoxicity (chemical burn of plant tissue) due to a wide variety of plant material involved.

3. Pesticide drift.

4. The persistence of pesticides beyond the intended period of pest control.
5. Application methods which will minimize or prevent hazards to humans, pets, and other domestic animals.

6. Nontarget exposures.

(D) Category 4—Seed Treatment.

1. The types of seeds which require chemical protection against pests.
2. Factors such as seed coloration, pesticide carriers, and surface active agents which influence pesticide binding and may affect germination.
3. The hazards associated with the handling, sorting, and mixing of treated seed.
4. The problems regarding the misuse of seed treated with pesticides, such as the introduction of treated seed into food and feed channels.
5. The proper disposal of unused treated seed.
6. The importance of proper application techniques to avoid harm to nontarget organisms.

(E) Category 5—Aquatic Pest Control.

1. The secondary effects which can be caused by improper application rates, incorrect formulations, and the faulty application of those pesticides used in this category.
2. Various water use situations and the potential for downstream adverse effects.
3. The potential adverse effects of pesticides on nontarget plants, fish, birds, beneficial insects, and other organisms which may be present in aquatic environments.
4. The principles of limited area applications.

A. Subcategory b—Sewer Root Pest Control.

(I) Pesticide labels and labeling including metam-sodium pesticide products used for sewer root pest control.

(II) Pesticide safety and the need for the use of personal protective equipment, including problems and mistakes leading to exposure and the signs and symptoms of human and environmental exposure.

(III) Equipment used to perform sewer root pest control applications.

(IV) Proper storage, handling, transport, spills, cleanup, and disposal including the disposal of excess material, waste, and containers.

(F) Category 6—Right-of-Way Pest Control.

1. The wide variety of environments involved in right-of-way pest control.
2. Techniques to minimize nontarget exposure, pesticide run off, pesticide drift, and excess foliage destruction.
3. The recognition of target pest organisms involved in right-of-way pest control.
4. Herbicides and the need for containing these pesticides within the right-of-way area.
5. The impact of pesticides on adjacent areas and communities.
6. Potential for phytotoxicity due to a wide variety of plants and pests to be controlled.
7. Persistence beyond the intended period of pest control.

(G) Category 7—Structural Pest Control.

1. Subcategory a—General Structural Pest Control.

A. A wide variety of structural pests, including signs of their presence, life cycles, biology, and behavior as it may be relevant to problem identification and control.

B. The types of formulations appropriate for the control of these pests.

C. The application of pesticides in a manner to avoid damage to the structure, contamination of food, contamination of the structure and surrounding area, and exposure of people and pets.

D. The specific factors which may lead to a hazardous condition, including continuous exposure in the various situations encountered in this category.

E. Environmental conditions relating to outdoor applications of pesticides used in this category.

2. Subcategory b—Termite Pest Control.

A. Termites, including their life cycle and habits and a practical knowledge of termite damage.

B. Various associated wood-destroying organisms, including, but not limited to, powder post beetles, carpenter ants, and other wood destroying insects.

C. The use of pesticides in a manner to avoid exposure to humans, domestic pets, and other nontarget organisms.

D. Potential contamination of the environment and associated problems.

E. Types of formulations appropriate for control.

3. Subcategory c—Fumigation Pest Control.

A. Label and labeling comprehension. Familiarity with the pesticide labels and labeling for products used to perform non-soil fumigation, including labeling requirements specific to non-soil fumigants.

B. Safety. Measures to minimize adverse health effects, including all of the following:

(I) Understanding how certified applicators, noncertified applicators, and bystanders can become exposed to fumigants.

(II) Common problems and mistakes that can result in direct exposure to fumigants.

(III) Signs and symptoms of human exposure to fumigants.

(IV) Air concentrations of a fumigant that require applicators to wear respirators or to exit the work area entirely.

(V) Steps to take if a fumigant applicator experiences sensory irritation.

(VI) Understanding air monitoring, when it is required, and where and when to take samples.

(VII) Buffer zones, including procedures for buffer zone monitoring and who is allowed to be in a buffer zone.

(VIII) First aid measures to take in the event of exposure to a fumigant.

(IX) Labeling requirements for transportation, storage, spill clean up, and emergency response for non-soil fumigants, including safe disposal of containers and contaminated materials, and management of empty containers.

C. Non-soil fumigant chemical characteristics. Characteristics of non-soil fumigants including all of the following:

(I) Chemical characteristics of non-soil fumigants.

(II) Specific human exposure concerns for non-soil fumigants.

(III) How fumigants change from a liquid or solid to a gas.

(IV) How fumigants disperse in the application zone.

(V) Compatibility concerns for tanks, hoses, tubing, and other equipment.

D. Application. Selecting appropriate application methods and timing, including all of the following:

- (I) Application methods and equipment commonly used for non-soil fumigation.**
- (II) Site characteristics that influence fumigant exposure.**
- (III) Conditions that could impact timing of non-soil fumigant application, such as air stability, air temperature, humidity, and wind currents, and labeling statements limiting applications under specific conditions.**
- (IV) Conducting pre-application inspection of application equipment and the site to be fumigated.**
- (V) Understanding the purpose and methods of sealing the area to be fumigated, including the factors that determine which sealing method to use.**
- (VI) Calculating the amount of product required for a specific treatment area.**
- (VII) Understanding the basic techniques for calibrating non-soil fumigant application equipment.**
- (VIII) Understanding when and how to conduct air monitoring and when it is required.**

E. Pest factors. Pest factors that influence fumigant activity, including all of the following:

- (I) Influence of pest factors on fumigant volatility.**
- (II) Factors that influence gaseous movement through the area being fumigated and into the air.**
- (III) Identifying pests causing the damage and verifying they can be controlled with fumigation.**
- (IV) Understanding the relationship between pest density and application rate.**
- (V) The importance of proper application rate and timing.**

F. Personal protective equipment. Understanding what personal protective equipment is necessary and how to use it properly, including all of the following:

- (I) Following label directions for required personal protective equipment.**
- (II) Selecting, inspecting, using, caring for, replacing, and disposing of personal protective equipment.**
- (III) Understanding the types of respirators required when using specific non-soil fumigants and how to use them properly, including medical evaluation, fit testing, and required replacement of cartridges and canisters.**
- (IV) Labeling requirements and other laws applicable to medical evaluation for respirator use, fit tests, training, and record keeping.**

G. Fumigant management plans and post-application summaries. Information about fumigant management plans and when they are required, including all of the following:

- (I) When a fumigant management plan must be in effect, how long it must be kept on file, where it must be kept during the application, and who must have access to it.**
- (II) The elements of a fumigant management plan and resources available to assist the applicator in preparing a fumigant management plan.**
- (III) The person responsible for verifying that a fumigant management plan is accurate.**
- (IV) The elements, purpose, and content of a post-application summary, who must prepare it, and when it must be completed.**

H. Posting requirements. Understanding posting requirements, including all of the following:

(I) Understanding who is allowed in an area being fumigated or after fumigation and who is prohibited from being in such areas.

(II) Distinguishing fumigant labeling-required posting and treated area posting, including the pre-application and post-application posting timeframes for each.

(III) Proper choice and placement of warning signs.

(H) Category 8—Public Health Pest Control.

- 1. Vector-disease transmission as it relates to, and influences, pesticide application problems.**
- 2. Pests commonly involved in public health pest control, including the life histories and habits of these pests.**
- 3. Environments and sites commonly found in public health pest control, which range from streams to those conditions found in buildings.**
- 4. The importance of, and employment of, such nonchemical control methods as sanitation, waste disposal, and drainage.**
- 5. How to minimize damage to and contamination of areas treated.**
- 6. Acute and chronic exposure of people and pets.**
- 7. Nontarget exposures.**

(I) Category 9—Regulatory Pest Control.

- 1. Regulated pests, applicable laws pertaining to pest quarantine and other forms of pest regulation, and the potential impact on the environment of pesticides used in suppression and eradication programs.**
- 2. Factors influencing introduction, spread, and population dynamics of relevant pests.**

(J) Category 10—Demonstration and Research Pest Control.

- 1. Comprehensive standards reflecting a broad spectrum of pesticide uses.**
- 2. Problems, pests, and population levels occurring in each demonstration or research situation.**
- 3. An understanding of pesticide-organism interactions and the importance of integrating pesticide use with other control methods.**
- 4. Effects of restricted use pesticides on target and nontarget organisms.**
- 5. The applicant shall demonstrate competence in the category of Demonstration and Research Pest Control and must also be certified in the proper category(ies) of use.**

(K) Category 11—Wood Products Pest Control.

- 1. Wood degradation and a general knowledge of pesticides used to prevent or control the degradation.**
- 2. An understanding of the pesticides used to preserve wood, including a knowledge of solution formulations, application techniques, hazards to man, domestic animals, and the environment, and the safe and proper means of container storage and disposal.**

(L) Category 12—Soil Fumigation Pest Control.

- 1. Label and labeling comprehension. Familiarity with the pesticide labels and labeling for products used to perform soil fumigation, including all of the following:**
 - A. Labeling requirements specific to soil fumigants.**
 - B. Requirements for certified applicators of fumigants, fumigant handlers, and fumigant handler activities, and the safety information that certified applicators must provide to noncertified restricted use pesticide applicators using fumigants under their direct supervision.**
 - C. Entry-restricted periods for tarped and untarped field application scenarios.**

- D. Recordkeeping requirements.**
- E. Labeling provisions unique to fumigant products containing certain active ingredients.**
- 2. Safety. Measures to minimize adverse health effects, including all of the following:**
 - A. Understanding how certified applicators, noncertified RUP applicators using fumigants under direct supervision of certified applicators, field workers, and bystanders can become exposed to fumigants.**
 - B. Common problems and mistakes that can result in direct exposures to fumigants.**
 - C. Signs and symptoms of human exposure to fumigants.**
 - D. Air concentrations of a fumigant that require that applicators wear respirators or exit the work area entirely.**
 - E. Steps to take if a fumigant applicator experiences sensory irritation.**
 - F. Understanding air monitoring, when it is required, and where and when to take samples.**
 - G. Buffer zones, including procedures for buffer zone monitoring and who is allowed to be in the buffer zone.**
 - H. First aid measures to take in the event of exposure to a soil fumigant.**
 - I. Labeling requirements for transportation, storage, spill cleanup, and emergency response for soil fumigants, including safe disposal of containers and contaminated soil, and management of empty containers.**
- 3. Soil fumigant chemical characteristics. Characteristics of soil fumigants including all of the following:**
 - A. Chemical characteristics of soil fumigants.**
 - B. Specific human exposure concerns for soil fumigants.**
 - C. How soil fumigants change from a liquid or solid to a gas.**
 - D. How soil fumigants disperse in the application zone.**
 - E. Compatibility concerns for tanks, hoses, tubing, and other equipment.**
- 4. Application. Selecting appropriate application methods and timing, including all of the following:**
 - A. Application methods, including but not limited to water-run and non-water-run applications, and equipment commonly used for each soil fumigant.**
 - B. Site characteristics that influence fumigant exposure.**
 - C. Understanding temperature inversions and their impact on soil fumigant application.**
 - D. Weather conditions that could impact timing of soil fumigant application, such as air stability, air temperature, humidity, and wind currents, and labeling statements limiting applications during specific weather conditions.**
 - E. Conducting pre-application inspection of application equipment.**
 - F. Understanding the purpose and methods of soil sealing, including the factors that determine which soil sealing method to use.**
 - G. Understanding the use of tarps, including the range of tarps available, how to seal tarps, and labeling requirements for tarp removal, perforation, and repair.**
 - H. Calculating the amount of product required for a specific treatment area.**
 - I. Understanding the basic techniques for calibrating soil fumigant application equipment.**

5. Soil and pest factors. Soil and pest factors that influence fumigant activity, including all of the following:

- A. Influence of soil factors on fumigant volatility and movement within the soil profile.**
- B. Factors that influence gaseous movement through the soil profile and into the air.**
- C. Soil characteristics, including how soil characteristics affect the success of a soil fumigant application, assessing soil moisture, and correcting for soil characteristics that could hinder a successful soil fumigant application.**
- D. Identifying pests causing the damage and verifying they can be controlled with soil fumigation.**
- E. Understanding the relationship between pest density and application rate.**
- F. The importance of proper application depth and timing.**

6. Personal protective equipment. Understanding what personal protective equipment is necessary and how to use it properly, including all of the following:

- A. Following labeling directions for required personal protective equipment.**
- B. Selecting, inspecting, using, caring for, replacing, and disposing of personal protective equipment.**
- C. Understanding the types of respirators required when using specific soil fumigants and how to use them properly, including medical evaluation, fit testing, and required replacement of cartridges and canisters.**
- D. Labeling requirements and other laws applicable to medical evaluation for respirator use, fit tests, training, and recordkeeping.**

7. Fumigant management plans and post-application summaries. Information about fumigant management plans, including all of the following:

- A. When a fumigant management plan must be in effect, how long it must be kept on file, where it must be kept during the application, and who must have access to it.**
- B. The elements of a fumigant management plan and resources available to assist the applicator in preparing a fumigant management plan.**
- C. The person responsible for verifying that a fumigant management plan is accurate.**
- D. The elements, purpose, and content of a post-application summary, who must prepare it, and when it must be completed.**

8. Buffer zones and posting requirements. Understanding buffer zones and posting requirements, including all of the following:

- A. Buffer zones and the buffer zone period.**
- B. Identifying who is allowed in the buffer zone during the buffer zone period and who is prohibited from being in a buffer zone during the buffer zone period.**
- C. Using the buffer zone table from the labeling to determine the size of the buffer zone.**
- D. Factors that determine the buffer zone credits for application scenarios and calculating buffer zones using credits.**
- E. Distinguishing buffer zone posting and treated area posting, including the pre-application and post-application posting timeframes for each.**
- F. Proper choice and placement of warning signs.**

(M) Category 13—Aerial Pest Control.

1. Labeling. Labeling requirements and restrictions specific to aerial application of pesticides including:

- A. Spray volumes.**

B. Buffers and no-spray zones.

C. Weather conditions specific to wind and inversions.

2. Application equipment. Understand how to choose and maintain manned and unmanned aircraft equipment, either fixed or rotary wing, for aerial application, including all of the following:

A. The importance of inspecting aerial application equipment to ensure it is in proper operating condition prior to beginning an application.

B. Selecting proper nozzles to ensure it is in proper operating condition prior to beginning an application.

C. Knowledge of components of an aerial pesticide application system, including pesticide hoppers, tanks, pumps, and types of nozzles.

D. Interpreting a nozzle flow chart.

E. Determining the number of nozzles for intended pesticide output using nozzle flow rate chart, aircraft speed, and swath width.

F. How to ensure nozzles are placed to compensate for uneven dispersal due to uneven airflow from wingtip vortices, helicopter rotor turbulence, and aircraft propeller turbulence.

G. Where to place nozzles to produce the appropriate droplet size.

H. How to maintain the application system in good repair, including pressure gauge accuracy, filter cleaning according to schedule, and checking nozzles for excessive wear.

I. How to calculate required and actual flow rate.

J. How to verify flow rate using fixed timing, open timing, known distance, or a flow meter.

K. When to adjust and calibrate application equipment.

3. Application considerations. The applicator must demonstrate knowledge of factors to consider before and during application, including all of the following:

A. Weather conditions that could impact application by affecting aircraft engine power, take-off distance, and climb rate, or by promoting spray droplet evaporation.

B. How to determine wind velocity, direction, and air density at the application site.

C. The potential impact of thermals and temperature inversions on aerial pesticide application.

4. Minimizing drift. The applicator must demonstrate knowledge of methods to minimize off-target pesticide movement, including all of the following:

A. How to determine drift potential of a product using a smoke generator.

B. How to evaluate vertical and horizontal smoke plumes to assess wind direction, speed, and concentration.

C. Selecting techniques that minimize pesticide movement out of the area to be treated.

D. Documenting special equipment configurations or flight patterns used to reduce off-target pesticide drift.

5. Performing aerial application. The applicator must demonstrate competency in performing an aerial pesticide application, including all of the following:

A. Selecting a flight altitude that minimizes streaking and off-target pesticide drift.

B. Choosing a flight pattern that ensures applicator and bystander safety and proper application.

C. The importance of engaging and disengaging spray precisely when entering and exiting a predetermined swath pattern.

D. Tools available to mark swaths, such as global positioning systems and flags.

E. Recordkeeping requirements for aerial pesticide applications including application conditions if applicable.

6. The applicant shall not only demonstrate competence in the category of Aerial Pest Control, but must also be certified in the proper category(ies) of use.

*AUTHORITY: section 281.025, RSMo Supp. 1989. * Original rule filed May 12, 1976, effective Oct. 21, 1976. Amended: Filed Sept. 6, 1977, effective Dec. 11, 1977. Amended: Filed March 13, 1978, effective June 11, 1978. Amended: Filed Aug. 14, 1989, effective Jan. 1, 1990.*

**Original authority: 281.025, RSMo 1974, amended 1977, 1988, 1993, 1995.*

PUBLIC COST: This proposed amendment will not cost state agencies or political subdivisions more than five hundred dollars (\$500) in the aggregate.

PRIVATE COST: This proposed amendment will not cost private entities more than five hundred dollars (\$500) in the aggregate.

*NOTICE OF PUBLIC HEARING AND NOTICE TO SUBMIT COMMENTS: Anyone may file a statement in support of or in opposition to this proposed amendment with the Missouri Department of Agriculture, PO Box 630, Jefferson City, MO 65102. To be considered, comments must be received within thirty (30) days after publication of this notice in the **Missouri Register**. A public hearing is scheduled for 10:00 a.m, July 22, 2024, Missouri Department of Agriculture, Third Floor Boardroom, 1616 Missouri Boulevard, Jefferson City, MO, 65109.*