

**Competency Standards for Pesticide Applicators**  
**Chapter 487, Florida Statutes**  
**Rules 5E-9.023 and 5E-9.024, Florida Administrative Code**

**Core Competency Standards (from Rule 5E-9.023, F.A.C.)**

1. Pesticide labels and labeling comprehension, including:
  - a. The general format and terminology of pesticide labels and labeling;
  - b. The understanding of instructions, warnings, terms, symbols, and other information appearing on pesticide labels;
  - c. Classification of the product (unclassified or restricted use); and
  - d. Necessity for use consistent with the label.
2. Pesticide safety, including:
  - a. Pesticide toxicity, hazards to man, and common exposure routes;
  - b. Common types and causes of pesticide accidents;
  - c. Precautions necessary to guard against injury to applicators and other individuals in or near treated areas;
  - d. Need for and use of protective clothing and personal protective equipment;
  - e. Signs and symptoms of pesticide poisoning;
  - f. First aid and other procedures to be followed in case of a pesticide accident; and
  - g. Proper identification, storage, transport, handling, mixing and loading procedures and disposal methods for pesticides and empty pesticide containers, including management actions and precautions to be taken to prevent children or other individuals from having access to pesticides or pesticide containers.
3. Environmental - The potential environmental consequences of the use and misuse of pesticides as may be influenced by factors such as:
  - a. Weather and climate;
  - b. Terrain, geological features, and soil type;
  - c. Presence of fish or other wildlife, and other non-target organisms; and
  - d. Wetlands, other bodies of water, and soil drainage patterns.
4. Pest features, including:
  - a. Common features of pest organisms and characteristics of damage needed for pest recognition;
  - b. Identifying features of relevant pests; and
  - c. Pest development and biology relevant to problem identification or pest control.
5. Pesticide factors, including:
  - a. Types of pesticides;
  - b. Types of formulations;
  - c. Compatibility, synergism, persistence, and animal or plant toxicity of pesticide formulations;
  - d. Hazards and residues associated with use;
  - e. Factors which may influence effectiveness or lead to pesticide resistance; and
  - f. Pesticide mixing, loading, dilution, or other preparation procedures.
6. Pesticide application equipment, including:
  - a. Types and components of equipment and advantages and limitations of each; and
  - b. Equipment use, maintenance and calibration.
7. Application methodology, including:
  - a. Methods used to apply various formulations of pesticides, and the knowledge of which formulation and application method should be used in a given situation;
  - b. Characteristics that distinguish between proper and improper pesticide applications; and
  - c. Methods of minimizing or preventing pesticide drift into the environment.
8. Laws and regulations - applicable state and federal laws and regulations.

## **Category Competency Standards (from Rule 5E-9.024, F.A.C.)**

**Aerial Application.** Applicators seeking licensure in this category shall demonstrate a practical knowledge of the principles and practices of aerial pest control and the safe application of pesticides by aerial delivery means.

**Agricultural Row Crop Pest Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge of agricultural row crops and associated pests, the chemical control measures that pertain to the prevention or control of such pests, the equipment or methodologies used to safely and effectively implement such measures, the potential for pesticide residues on such crops, preharvest application intervals, post-application reentry interval restrictions, phytotoxicity, pesticide-related soil or water problems, potential for pesticide-induced environmental contamination, and non-target injury and community problems that may result from the improper use of pesticides in agricultural row crop production. Applicators in this category shall also demonstrate practical knowledge of the procedures and equipment used to apply pesticides with irrigation water through an irrigation system. This knowledge shall include equipment calibration; proper design, use, and maintenance of anti-siphon devices and check valves to prevent pesticide contamination of water supplies; proper interpretation of pesticide label or labeling requirements for products registered for chemigation; and appropriate use of personal protective equipment associated with this type of application.

**Agricultural Tree Crop Pest Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge of the agricultural tree crops and associated pests, the chemical control measures that pertain to the prevention or control of such pests, the equipment or methodologies required to safely and effectively implement such measures, the potential for pesticide residues on food crops, preharvest application intervals, post-application reentry interval restrictions, phytotoxicity, pesticide-related soil or water problems, potential for pesticide-induced environmental contamination, and non-target injury or community problems that may result from the improper use of pesticides in agricultural tree crop production. Applicators in this category shall also demonstrate practical knowledge of the procedures and equipment used to apply pesticides with irrigation water through an irrigation system. This knowledge shall include equipment calibration; proper design, use, and maintenance of anti-siphon devices and check valves to prevent pesticide contamination of water supplies; proper interpretation of pesticide label or labeling requirements for products registered for chemigation; and appropriate use of personal protective equipment associated with this type of application.

**Agricultural Animal Pest Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge of agricultural animal production and associated pests, the chemical control measures that pertain to the prevention or control of such pests, the equipment or methodologies required to safely and effectively implement such measures, the specific toxicity of such pesticides and associated residue potential, and the potential for animal injury associated with pesticide formulation, application techniques, animal age or stress, and extent of treatment.

**Aquatic Pest Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge of pest organisms in aquatic environments, the chemical control measures that pertain to the control of such pests, and the equipment or methodologies required to safely and effectively implement such pest control measures. This knowledge shall include understanding calculation of volume of water to be treated; application rates; pH; potential secondary effects; various water use situations and the potential of downstream effects; potential pesticide effects on non-target organisms; and the principles of limited area application.

**Chlorine Gas Infusion.** Applicators seeking licensure in this category shall demonstrate practical knowledge of the safe handling and application of liquefied chlorine gas for treatment of swimming pools, hot tubs and spas. This will include a knowledge of the toxicology of liquefied chlorine gas, the dispersion properties and other characteristics of gaseous chemicals, equipment types, calibration procedures, application techniques, air and water monitoring procedures, use and maintenance of personal protective equipment and clothing, and factors that may lead to a hazardous condition, including handling of pressurized chemicals and direct or continuous exposure to chlorine gas.

**Demonstration and Research.** Applicators seeking licensure in this category shall demonstrate practical knowledge of pesticide compatibility, pH, and solubility; proper pesticide use and handling; equipment types and calibration conversions for small plots; principles of integrated pest management; pesticide resistance; safety procedures for pesticide transport, storage, and disposal; interpretation of Material Safety Data Sheets for pesticide products; environmental effects of pesticide use; laws and regulations governing pesticide use and experimental use; biotechnology as it relates to pest control; and liability associated with pesticide use.

**Forest Pest Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge of the types of forests, forest nurseries and seed orchards in Florida and associated pests, forest population dynamics, relative biotic agents and vulnerability to pesticides, the chemical control measures that pertain to the prevention or control of forest pests, and the equipment or methodologies required to safely and effectively implement such measures while avoiding adverse effects on wildlife, ground or surface water, and recreational areas visited by the general public.

**Natural Areas Weed Management.** Applicators seeking licensure in this category shall demonstrate practical knowledge of pest plants that invade natural communities in Florida, the chemical control measures that pertain to such

pests, and the equipment or methodologies required to safely implement such pest control measures. This knowledge shall include special techniques and proper herbicide selection to effectively control target species and minimize adverse effects to the natural community. Knowledge of herbicide characteristics including toxicity to wildlife, behavior in plants, behavior in soil, persistence, and environmental fate, as well as methods for herbicide dilution and rate calculations will be demonstrated.

**Organotin Antifouling Paint Pest Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge of the principles and practices of using antifouling paints, including toxicity to humans and non-target organisms via common exposure routes; proper cleaning, disposal and containment techniques; climatic factors that may influence environmental hazards; common types and features of target and non-target aquatic/marine organisms; proper handling, mixing and application procedures; and, the laws and regulations governing pesticides and antifouling paints.

**Ornamental and Turf Pest Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge and recognition of pesticide problems associated with the production and maintenance of ornamental plants and turfgrasses, the chemical control measures that pertain to the prevention or control of such pests and the equipment or methodologies required to safely and effectively implement such measures. This knowledge shall encompass an understanding of potential non-target injury due to drift and implementation of application methods to minimize exposure to humans, pets, or other domestic animals.

**Private Applicator Agricultural Pest Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge of agricultural plant and animal production, associated pests, the chemical control measures that pertain to the prevention or control of such pests, the equipment or methodologies required to safely and effectively implement such measures, preharvest application intervals, post-application reentry interval restrictions, specific pesticide toxicity, and the potential for: pesticide residues in agricultural commodities; phytotoxicity; pesticide-related soil or water impacts; pesticide-induced environmental contamination; non-target injury; off-site problems that may result from the improper use of pesticides in agricultural production; and animal injury associated with pesticide formulation, application techniques, animal age or stress, or extent of treatment. Applicators in this category shall also demonstrate practical knowledge of the procedures and equipment used to apply pesticides with irrigation water through an irrigation system. This knowledge shall include equipment calibration; proper design, use, and maintenance of anti-siphon devices and check valves to prevent pesticide contamination of water supplies; proper interpretation of pesticide label or labeling requirements for products registered for chemigation; and appropriate use of personal protective equipment associated with this type of application. Applicators seeking licensure in this category shall also demonstrate practical knowledge of soil-inhabiting pests and pests of stored raw agricultural commodities, the fumigant pesticides that may be used to control such pests, and the equipment or methodologies required to safely implement fumigation measures to control such pests. This knowledge shall include the basics of fumigant pesticide toxicology; application methodologies for applying soil and commodity fumigants; techniques and procedures for monitoring the concentration of a fumigant pesticide in soil, storage facilities, air or water; use and maintenance of personal protective equipment and clothing; and specific safety procedures for handling pressurized chemicals and for avoiding non-target exposure to a fumigant pesticide.

**Raw Agricultural Commodity Fumigation.** Applicants seeking licensure in this category shall demonstrate practical knowledge of pests of stored raw agricultural commodities, the fumigant pesticides that may be used to control such pests, and the equipment or methodologies required to safely implement fumigation measures to control such pests. This knowledge shall include the basics of fumigant pesticide toxicology; application methodology for fumigating stored agricultural commodities; techniques and procedures for monitoring the concentration of a fumigant pesticide in a storage facility or in air or water; use and maintenance of personal protective equipment and clothing; and specific safety procedures for handling pressurized chemicals and for avoiding non-target exposure to a fumigant pesticide.

**Regulatory Inspection and Sampling.** There are no specific certification standards for this category. The general certification standards listed in rule 5E-9.023 are all that is required for licensees in this category.

**Regulatory Pest Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge of regulated pests, applicable laws relating to quarantine and other regulatory measures, environmental impact of pesticides used in suppression and eradication programs, and factors that may influence the introduction, spread, or population dynamics of regulated pests. Such knowledge shall extend beyond that relevant to Florida situations because of the necessity to assist periodically throughout the U.S. with regulated pests. Applicators shall also demonstrate practical knowledge of soil-inhabiting pests and pests of agricultural crops grown inside structures such as greenhouses, the fumigant pesticides that may be used to control such pests, and the equipment or methodologies required to safely implement fumigation measures to control such pests. This knowledge shall include the basics of fumigant pesticide toxicology; application methodologies for applying soil and space fumigants; techniques and procedures for monitoring the concentration of a fumigant pesticide in soil, air, or water; use and maintenance of personal protective equipment and clothing; and specific safety procedures for handling pressurized chemicals and for avoiding non-target exposure to a fumigant pesticide. Applicants seeking licensure in this category shall demonstrate practical knowledge of pests of stored raw agricultural commodities, the fumigant pesticides that may be used to control such pests, and the equipment or methodologies required to safely implement fumigation measures to control such pests. This knowledge shall include the basics of fumigant pesticide toxicology and application methodology for fumigating stored agricultural commodities.

**Right-of-Way Pest Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge of pests that occur in right-of-way areas accompanying roads, electric lines and substations, pipelines, railroads, and similar situations and measures for control. This knowledge shall include types of herbicides used on right-of-way areas; chemical control measures that pertain to the prevention and control of right-of-way pests; equipment or methodologies required to safely and effectively implement such measures; pesticide runoff and drift prevention; recognition of target organisms; actions necessary to prevent excessive foliage destruction; and potential effects on non-target and off-site organisms.

**Seed Treatment.** Applicators seeking licensure in this category shall demonstrate practical knowledge of the types of seeds that require chemical protection against pests, the chemical control measures that pertain to the control of such pests, and the equipment or methodologies required to safely and effectively implement such pest control measures. This knowledge shall include understanding the significance of coloring treated seed; the effects of carriers and surface active agents which influence pesticide binding and may affect germination; the hazards associated with handling, sorting and mixing, packaging and labeling treated seed; misuse of treated seed, such as introduction of treated seed into food and feed channels; and proper disposal of unused treated seeds.

**Sewer Root Control.** Applicators seeking licensure in this category shall demonstrate practical knowledge of the safe handling and proper application of sewer root control chemicals, including practical knowledge of root growth and biology; equipment types and calibration procedures; proper pesticide handling, mixing and application procedures; proper use and maintenance of personal protective equipment; toxicity of root control pesticides to humans and non-target organisms via common exposure routes; proper cleaning, disposal and containment techniques; effects of root control pesticides on ground water, sewage treatment plants, septic tanks, holding tanks, lift stations, and other sewage treating, conveying, or handling equipment; environmental effects; factors that may lead to a hazardous condition; and the laws and regulations governing pesticide use.

**Soil and Greenhouse Fumigation.** Applicators seeking licensure in this category shall demonstrate practical knowledge of soil-inhabiting pests and pests of agricultural crops grown inside structures such as greenhouses, the fumigant pesticides that may be used to control such pests, and the equipment or methodologies required to safely implement fumigation measures to control such pests. This knowledge shall include the basics of fumigant pesticide toxicology; application methodologies for applying soil and structural fumigants; techniques and procedures for monitoring the concentration of a fumigant pesticide in soil, air or water; use and maintenance of personal protective equipment and clothing; and specific safety procedures for handling pressurized chemicals and for avoiding non-target exposure to a fumigant pesticide.

**Wood Treatment.** Applicators seeking licensure in this category shall demonstrate practical knowledge in using wood preservatives, air monitoring procedures, personal protective clothing and equipment, hygiene, related health and safety measures, emergency procedures, and practices necessary to prevent environmental contamination.