

# **Alaska Aerial Pest Control Manual**



## **Category Eleven**

In general, applicators who apply pesticides to property other than their own must obtain certification from the Alaska Department of Environmental Conservation (ADEC) Pesticide Program. Applicators who apply restricted-use pesticides, regardless of location, must also be certified.

**All individuals who apply pesticides by manned or unmanned aircraft** must be certified by the Alaska Department of Environmental Conservation (ADEC) in the Aerial Pest Control Category (Category Eleven). This includes any aircraft capable of flight that applies pesticides at a height of one meter or greater above the ground or top of vegetation. This is true for applications of all pesticides, whether general- or restricted-use pesticides.

This *National Aerial Applicator's Manual* contains the majority of information needed to successfully complete the written examination to obtain certification in Category Eleven in Alaska. However, regulations and requirements are different in Alaska. This manual provides additional information that is specific to Alaska.

The information needed to successfully complete the written core examination required for all certified pesticide applicators in Alaska includes:

1. National Pesticide Applicator Certification Core Manual;
2. Alaska Core Manual; and
3. State of Alaska Pesticide Regulations in Title 18, Chapter 90 of the Alaska Administrative Code (18 AAC 90)

The information needed to successfully obtain certification in Category Eleven in Alaska includes:

1. This Alaska Manual; and
2. The *National Aerial Applicator's Manual*.

### **Learning Objectives**

#### **Alaska Requirements**

- Explain when a pesticide-use permit is required.
- Explain regulations related to pesticide drift.

#### **Laws and Regulations**

- Describe the requirements for pilot certification for agricultural aircraft operations.
- List the section of FARS that pertains to agricultural aircraft operations, and describe the topics that this section addresses.
- Describe the purpose and goals of PAASS.

#### **Operation and Safety**

- Describe the types of activities that would classify someone as an agricultural pesticide handler, as defined under Worker Protection Standards (WPS).
- Describe the information and training that must be provided for agricultural pesticide handlers.
- Describe the inspection requirements for aircraft that will be operated over congested areas.

- Describe the characteristics of the aircraft and pesticide delivery system that must be evaluated to determine whether the equipment is suitable for the proposed work.
- List information that should be collected during scouting of target sites.
- Describe notification and posting requirements required by WPS.
- List some kinds of information about applications that are recommended to be kept with required records.
- Describe plans that should be made in case of pesticide application equipment malfunction.

**Pesticide Drift**

- Describe different ways that pesticides can move off of the intended target area.
- List the time it takes various sizes of droplets to fall 10 feet, and the distance of drift that would occur in that time at a wind speed of 3 mph.
- Describe the three physical properties of a pesticide that affect droplet size.
- Explain how air temperature, humidity, air movement, height of application, and spray carrier or diluent can affect droplet size.
- Explain why pesticides should not be sprayed during temperature inversions.
- Explain how nozzle direction or orientation can affect droplet size.
- Describe equipment settings that will help reduce off-target drift.
- Describe application techniques that will help reduce off-target drift.

**Pesticide Systems**

- Describe some characteristics required for pesticide application equipment.
- Describe a sign of a possible pesticide leak in the application equipment.
- List pesticide formulations that require mechanical agitation.
- Define the term bridging.
- State the longest recommended boom length, with respect to wing span and explain problems associated with booms that exceeds the recommended length.
- Explain why air bleed lines should be installed at the end of spray booms.
- Explain the purpose of flow meters, valves, and pressure gauges in a pesticide system.
- Explain why nozzles with a cone spray pattern are not widely used for aerial applications.
- Describe advantages and disadvantages of straight stream, flat fan, even flat fan, rotary atomizer, and hollow cone nozzles.
- Explain some advantages of using a GPS, flow volume controllers, and/or mapping systems during aerial applications.
- Describe the impact of prop wash displacement on spray patterns, and how to compensate for it.
- Describe the impact of wing tip and rotor vortex on spray patterns, and how to compensate for it.
- Describe the impact of rotor distortion on spray patterns, and how to compensate for it.
- Describe the process for spray pattern testing
- Describe common problems in spray patterns that are found through spray pattern testing.
- State the most effective way to change the output of a spray boom.

- List appropriate application parameters when using a ram-air spreader on a fixed wing aircraft.
- Describe the two common types of metering gates used in ram-air spreaders.
- Explain how to adjust spreader vanes to account for prop wash displacement.
- Describe the appropriate mounting configuration for a ram-air spreader, including attack angle.
- Explain how application rate impacts swath width on a ram-air spreader.
- Explain how a centrifugal spreader distributes material.

**Calibration**

- List reasons why proper calibration of equipment is essential.
- List the four factors that must be measured when performing calibration for spray application equipment.
- Describe circumstances that would warrant more frequent calibration.
- Explain how to measure flow volume on a rotary wing and a fixed wing aircraft.
- Calculate effective application rates, swath widths, convert ounces per second into gallons per minute, calculate gallons per mile at a known airspeed, determine acres per minute, gallons per acre, amount of pesticide to mix, area of irregular sites, granule application rate per acre, and other example problems.
- Describe how to measure effective swath width from a sprayer.
- Explain how application height impacts swath width.
- State the recommended application height for most spray applications.
- Explain why airspeed is generally not adjustable in fixed-wing applications.
- Describe the most effective way to change spray volume for most aerial applications.
- List the three factors that must be measured when performing calibration for granular application equipment.
- Describe the process for measuring granular output.
- Describe how to measure effective swath width from a spreader.

**Application**

- Describe some precautions to take when ferrying between the loading area and the application site.
- Describe some factors to look for during an initial inspection pass prior to application.
- Describe the pass angle relative to wind that is recommended during spray application, and two reasons why this angle is preferred.
- Explain how to determine when ground effect will occur to disrupt a spray pattern.
- Describe advantages and disadvantages of the race-track versus a back-and-forth pattern.
- State whether applications should be made going upslope or downslope over hilly terrain.
- Describe the process for executing a turnaround that is safe and will result in even application.
- List the usual recommended airspeed for applying granules.
- List the usual swath width when applying granules.
- Describe how density altitude can affect aircraft handling.

**CALCULATIONS**

Precise and accurate application is important for every pesticide application, but this is particularly true for the types of pesticide applications allowed under Category Eleven. Strong math skills, including the ability to calculate speed, volume, odd shaped areas, mixing ratios, rates of application, etc. will be necessary to successfully pass the Category Eleven Exam. You will need to carefully review pages 164-165, and 190-192 in the National Core Manual and Chapter Five of the National Aerial Applicator's Manual. Additional resources for pesticide applicator math are available online from the [Purdue Pesticide Program](#).

**ALASKA PESTICIDE PERMIT REQUIREMENTS**

In Alaska, all aerial applications of pesticide require a pesticide-use permit. This is true for applications of any type of pesticide, whether general or restricted-use. This includes application from any type of aircraft, including airplanes, helicopters, or hovercraft. Refer to the Alaska Core Manual for more information about permitting.

**ALASKA PESTICIDE DRIFT REGULATIONS**

Under 18 AAC 90.610, a person may not apply pesticides in a manner that results in off-target pesticide drift. **Overspray or drift is considered negligent application, and is prohibited.** Applicators are responsible for confining the pesticide to the target area, and for taking precautions to prevent other areas from being exposed to the pesticides being applied. This is particularly important during aerial applications, where conditions can lead to significant drift issues.

**Before Using Any Pesticide**

**STOP**

**All pesticides can be harmful to health  
and environment if misused.**

**Read the label  
carefully and use  
only as directed.**