

CHAPTER 115. INTRODUCTION TO FEDERAL AVIATION REGULATIONS PART 137 RELATED TASKS

1. AGRICULTURAL AIRCRAFT OPERATIONS.

Federal Aviation Regulations (FAR) Part 137 is applicable to all operators conducting agricultural aircraft operations. The definition of the term “agricultural aircraft operation” in FAR § 137.3 includes forest fire-fighting activities, e.g., “fire bombers” or tankers. Anyone conducting such activities is required to obtain or have an Agricultural Aircraft Operator Certificate. The exceptions are certificated external-load operators dispensing only water and public aircraft (defined in FAR Part 1).

3. PUBLIC EMERGENCIES. FAR § 137.1(b) allows certificated agricultural operators to deviate from FAR Part 137 for relief and welfare activities during public emergencies.

A. Definition of Public Emergency. The term “public emergency” as used in FAR Part 137 means an emergency requiring relief in the public interest. The emergency is of such magnitude that if immediate action were not taken, life, property, or the economic welfare of a substantial portion of a population or a significant geographic area would be jeopardized by the circumstances of that emergency. The determination of a public emergency is made by an agency of the United States or a state or local government. Any situation which is solely a matter of convenience or economic advantage to the operator is not deemed to be a public emergency.

B. Deviation from FAR Part 137 in Event of Public Emergency. If an operator deviates from FAR Part 137, he or she shall complete the report required by FAR § 137.1(c).

5. DEFINITION OF AGRICULTURAL AIRCRAFT OPERATION.

An agricultural aircraft operation means the operation of an aircraft for the purpose of dispensing any economic poison; dispensing any other substance intended for plant nourishment, soil treatment, plant growth, or pest control; or engaging in dispersing activities directly affecting agriculture, horticulture, or forest preservation.

A. Economic Poisons. An economic poison is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insects, rodents, nematodes, fungi, weeds, and other forms of plant or animal life or viruses or anything

declared by the Secretary of Agriculture to be a pest. Viruses on or in living man or other animals are excepted. Also, an economic poison is any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant.

B. Live Insects. The dispensing of live insects is not included in this definition.

7. MINIMUM EQUIPMENT LIST (MEL). Operators of multiengine agricultural aircraft must operate with a MEL for any or all multiengine aircraft or all equipment must be operating. (See chapter 58, Approve a Minimum Equipment List.)

9. PESTICIDE HOTLINE. The National Pesticide Telecommunication Network has a 24-hour toll-free number (1-800-858-PEST). Qualified personnel there can answer questions about any poisons, insecticides, herbicides, rodenticides, or fungicides and can also provide the LD 50 index for any farm chemical. They also provide information on treatment, by a doctor, after contamination or suspected contamination, on clean-up after a spill, about the location of the nearest poison control centers, and on disposal of containers. Inspectors should provide the name and telephone number of this hotline to agricultural operators who do not already have it.

11. COORDINATION WITH OTHER AGENCIES. The application of economic poisons, either by surface vehicle or aerial applicator involves regulation by Federal, state and local authorities.

A. Federal Authority. At the federal level, there are the U.S. Department of Agriculture and the Environmental Protection Agency (EPA), and in cases involving national parks or preservations, the Department of Interior.

B. State Authority. Additionally, each state has requirements for the purchase, application, and disposal of chemicals used in agricultural operations.

(1) Generally, each state has a testing and licensing requirement that each pesticide applicator must undergo before being allowed to operate within that state. This test may be administered by the state agricultural chemist or an authorized representative.

(2) For example, Indiana requires all pesticide operators to attend a training program and pass an examination administered by Purdue University. In California each applicant must pass a state test and be licensed in each county.

C. Inspector Concerns. The major concern of the inspector is in the area of flight operations associated with application of economic poisons. It is impractical for each inspector to become thoroughly familiar with all facets of agrichemical application and regulation.

(1) Questions concerning the handling, mixing, application ratios, or expiration dates of specific chemicals should be addressed to the state agency governing these areas.

(2) Federal Aviation Administration (FAA) inspectors should become familiar with the personnel responsible for operation and regulation of the Federal or State agencies who work with aerial application of chemicals. The expertise of these individuals will often assist the inspector in the certification, inspection and surveillance of agricultural aircraft operators.

(3) All economic poisons are required to have a label. If an inspector encounters an economic poison during an accident investigation or an inspection, he or she can obtain important information from that label, including recommended container disposal, name of the chemical company, etc.

13. OPERATING RULES. Although operating rules for agricultural aircraft are specified in Subpart C of FAR Part 137, following are some additional considerations.

A. Shoulder Harness. During inspection for initial certification, the shoulder harness specified in FAR § 137.31(b) should be inspected for proper installation by an airworthiness inspector.

B. Violations of FAR §§ 137.37 and 137.39. In cases involving alleged violations of FAR § 137.37 and 137.39, the inspector should seek the assistance of the county agent or equivalent representative of the U.S. Department of Agriculture, the EPA, or state agriculture authority in establishing proof of such violation. In certain violation cases involving alleged injury or hazard to the health of persons, assistance should be requested from the county health department.

C. Personnel Duties and Responsibilities. Compliance with the requirements of FAR § 137.41(a) will be considered satisfactory provided the operator can show the inspector that he or she maintains a record describing each person's duties and

responsibilities and the date such person was informed of those duties.

D. Proof of Property Interest. Should a question arise concerning whether or not the private agricultural aircraft operator owns or holds a lease on property where he or she is conducting agricultural aircraft operations, the operator should be required to show the deed or agricultural use lease pertaining to the property where the application work is performed.

(1) The term "property interest in the crop" means bona fide legal interest, not one which was created for the purpose of avoiding the requirements of FAR Part 137. For example, a tenant farmer living on rented land, growing the crop and sharing the proceeds with the owner, would normally have a bona fide property interest in the crop.

(2) For the purposes of this FAR, any property interest should be evidenced by a legal, written instrument.

E. Authorization from Air Traffic Control (ATC). Except for flights to and from a dispensing area conducted in an airport traffic area or a control zone (with an operating control tower), written authorization from the ATC facility is not required. However, verbal authorization must be obtained by contacting the ATC facility by aircraft radio, in person, or by telephone for receipt of the authorization.

F. Deviation from Airport Traffic Patterns. Pilots of agricultural aircraft may deviate from airport traffic patterns with the authorization of the control tower. At airports without control towers, the pilot may deviate from the traffic pattern if:

(1) Prior verbal coordination is made with the airport management. Written confirmation is not required.

(2) Deviations from the traffic pattern must be limited to agricultural aircraft operations.

(3) Landings and takeoffs should be made from runways or other areas of the airport so designated by airport management.

(4) The aircraft must at all times remain clear of and give way to aircraft conforming to the traffic pattern.

G. Minimum Safe Altitudes — Other Than Congested Areas. FAR § 137.49 permits the operator to operate an aircraft in dispensing operations contrary to FAR § 91.79 (Minimum Safe Altitudes), provided such operations are conducted without creating a hazard to persons or property on the surface and are in conjunction with aerial application activities. However, flights between dispensing operations must com-

ply with FAR § 91.79. For example, the pilot of an agricultural aircraft dispenses an economic poison on a field adjacent to a farmhouse. The pilot may operate less than 500 feet above the surface or closer than 500 feet to the house provided the house or its occupants are not exposed to hazard from the aircraft or the chemicals. However, unnecessary or hazardous pull-ups or turnarounds accomplished over the house could be considered a violation of the FAR.

15. LD⁵⁰ INDEX OF AGRICULTURAL CHEMICALS. All chemicals can be toxic if encountered in excess of normal amounts. Agricultural chemicals in common use are, in most instances, toxic to humans as well as to the insects, animals, and plants being controlled.

A. Organic Phosphates. One group of chemical compounds in frequent agricultural use is organic phosphates (sometimes called organophosphates), derived from phosphoric acid. Some examples are parathion, phosdrin, and malathion. These are generally the most toxic of all pesticides and, therefore, pose the greatest hazard to those handling or dispensing them.

B. Cumulative Toxic Effects of Organic Phosphates. Nearly all pesticides can have a cumulative effect; that is, symptoms of poisoning occur gradually over a period of time and can be confused with symptoms of other illnesses. This cumulative effect is far more insidious than a single, gross overexposure. This condition is often referred to as "chronic toxic effect."

(1) Currently, few states require handlers (including agricultural aircraft pilots) of organic phosphates to undergo periodic cholinesterase tests which determine the extent of chronic toxic effect.

(a) Cholinesterase is an enzyme which regulates the level of acetylcholine in the nervous system.

(b) Acetylcholine aids in the transfer of impulses between nerves, but without cholinesterase — the substance poisoned by organophosphates — acetylcholine builds up to abnormal levels. The result is a general paralysis and eventual death from respiratory paralysis.

(2) FAA inspectors should encourage operators to have any of their personnel, who are exposed regularly and frequently to organic phosphates, undergo periodic cholinesterase tests.

(a) Most hospitals or clinics have the equipment to conduct fairly accurate cholinesterase tests. University medical centers will have more sophisticated testing equipment which will be able to deliver highly accurate results.

(b) Whichever testing method operators elect to use, it is important that the inspector inform them that individuals should be tested before the spraying season begins in order to have a base to compare to subsequent tests after exposure.

C. LD⁵⁰ Index. The index (figure 115-1), which shows the comparative toxicity of the various chemicals, is for the information and use of inspectors engaged in the certification and surveillance of agricultural aircraft operations.

(1) LD⁵⁰ is the symbol used to denote the number of milligrams of chemical per kilogram of bodyweight of laboratory animals (usually rats), a single dose of which killed half the animals tested. The higher the LD₅₀ value, the lower the toxicity and the safer the chemical. For example, Dimethrin, with an LD₅₀ index of 40,000, is the least toxic on the list while 1080 dosium fluoroacetate, at 1.2, is the most toxic.

(2) The inspector must note that this list is not intended to be inclusive but merely as an aid in determining what is and is not a lethal chemical. The figures given are the approximate dosages that will kill 50 percent of the test animal population unless otherwise indicated. Other chemicals besides organic phosphates are included.

17. HAZARDOUS MATERIAL TRAINING. The danger of inspector contamination by toxic agricultural chemicals is very real. Common sense in the presence of agricultural chemicals is very important; therefore, inspectors should receive the following training before exposure to agricultural operators.

A. General Aviation Operations Indoctrination. This course deals, in part, with job functions which include agricultural certification areas and precautions concerning chemical toxicity.

B. Agricultural Aircraft Operator Certification and Inspection. This course provides 6 hours of instruction dedicated to the recognition of toxic chemicals, their labeling, and necessary precautions when performing job functions associated with agricultural operations. Included is detailed instruction on the hazards of chemicals used in agricultural operations.

C. Other Sources. Other FAA courses include information on hazardous material recognition and precautions. FAA Order 8020.11, Aircraft Accident and Incident Notification, Investigation, and Reporting, contains considerable information of general use to FAA inspectors regarding hazardous materials. Also, most county agricultural commissions or similar state and local organizations offer "mini" courses on hazardous chemicals and precautions to be taken.

19. POSSIBLE HEALTH HAZARDS DURING AGRICULTURAL AIRCRAFT ACCIDENT INVESTIGATION. Inspectors are normally required to place aircraft accident investigation duties above all other job functions. Because of this priority, it is not uncommon for an inspector to depart for the scene of an accident immediately after notification. In most instances, this is normal and proper. However, when agricultural aircraft are involved, such action could prove to be extremely dangerous.

A. Pre-Investigation Information. The inspector who departs for the scene of an agricultural aircraft accident without first finding out the nature of the pesticide, its hazards, and necessary precautions could be exposed to a serious health hazard. In this type of aircraft accident, a large amount of chemical can be concentrated in a small area, increasing the hazards to investigating inspectors.

B. Inspector Precautions. Efforts are underway to obtain more detailed information on agricultural materials, their hazards, and proper handling precautions. Until these guidelines are provided, the following precautions are recommended regarding accident investigations.

(1) Determine from the operator, or the persons for whom the operation was being conducted, the type, name, and EPA registration number of the material involved.

(2) With the above information call the nearest EPA office, poison control center, local agricultural commission officials, and/or the Pesticide Hotline to advise them of the fact that a large volume of a pesticide has been concentrated in a small area. Ask for guidance as to what precautions should be taken. If advised to wear special gear such as protective clothing, goggles, gloves, breathing equipment, etc., ask the length of time it will take for the dangerous characteristics of the pesticide to dissipate.

(3) Follow all instructions to the letter even if it means that on-the-scene investigation has to be postponed for several days.

(4) If special protective gear is needed or other precautions need to be taken, ensure that local law enforcement agencies are advised. Suggest that the scene of the accident be secured for the length of time special gear or precautions is needed.

C. Coordination with Law Enforcement Agencies. It is especially important that the inspector relay all the information received from EPA or a poison control center to the appropriate law enforcement agency. In most cases, law enforcement officers have already

been at the accident scene and may need medical treatment.

21. OPERATION SAFE (SELF-REGULATED APPLICATION AND FLIGHT EFFICIENCY). Operation SAFE is a program put on by the National Agricultural Aircraft Association (NAAA) to assist agricultural operators in fine-tuning their procedures and techniques for controlling spray drift. There have been several of these combined fly-in/clinic/training sessions in some states.

A. FAA Attendance. There is no requirement for FAA attendance in an official capacity unless requested to participate. Of the programs attended by FAA representatives, no problems were observed with respect to maneuvering or non-participating aircraft. Operations at the clinics have been conducted in a highly organized and safe manner.

B. NAAA Handbook. NAAA publishes a handbook which outlines, in detail, the concept of Operation SAFE and how to organize and conduct a clinic. Copies of this handbook are available from NAAA, 1005 E Street, S.E., Washington, DC 20003; (202) 546-5722.

C. FAA Recommendations. Based on the experience gained in the initial sessions of Operations SAFE, the following recommendations are provided:

(1) No waiver is necessary for the operations or maneuvers involved.

(2) A Notice to Airman (NOTAM) may be necessary if the operations are conducted at a public-use airport. The wording should alert the transient pilot that "simulated agricultural dispensing operations are being conducted alongside runway [number]."

D. FAA Comments. FAA comments and recommendations regarding the conduct of Operation SAFE sessions or the contents of the NAAA handbook should be directed to the FAA, Flight Standards Service, AFS-820, 800 Independence Ave., S.W., Washington, DC, 20591.

23. RENEWAL, AMENDMENT, CANCELLATION. An agricultural aircraft operator's certificate is effective until it is surrendered, suspended, or revoked. A currently effective certificate which has been lost or destroyed shall be replaced, upon written request from the operator, by the certificate-holding district office (CHDO). The replacement certificate will duplicate the lost or destroyed certificate. The replacement will have the word "DUPLICATE" placed on it and the date of its preparation indicated. The certificate will be signed by the district office manager (figure 115-2).

A. *Renewals.* Not applicable to FAR Part 137 certificates.

B. *Amendments.* An agricultural aircraft operator may apply to amend the operating certificate.

(1) If an operator desires to have the prohibition against dispensing economic poisons added to or removed from the operating certificate, the operator should apply on FAA Form 8710-3 in the same manner as for an original certificate (figure 115-3). The same procedure should be followed in applying for other changes on the Agricultural Aircraft Operator Certificate. If the application for amendment is denied, the applicant shall be advised in writing of the reason for denial.

(2) The FAA may also amend an agricultural aircraft operator's certificate as a result of actions taken under Title 49 of the United States Code and FAR Part 13.

C. *Cancellation.* The FAA may suspend or revoke an agricultural operator's certificate.

(1) In the case of a voluntary surrender (e.g., when the operator decides to cease agricultural operations or to have the certificate held by the FAA pending enforcement proceedings), the operator must, as soon as possible, return the certificate by mail (registered preferred) or in person to the district office having jurisdiction over the certificate.

(2) In the case of suspension or revocation of the certificate (e.g., as a result of a FAA enforcement action), the operator must, as soon as possible, return the certificate in a manner agreed to by the regional counsel.

(3) If the operator fails to meet the certification requirements of FAR § 137.19(e) (e.g., does not have at least one aircraft equipped for agricultural operations), the FAA shall cancel the certificate.

FIGURE 115-1
LD⁵⁰ INDEX OF CHEMICALS

COMPARATIVE INSECTICIDE, FUNGICIDE, HERBICIDE, AND RODENTICIDE TOXICITIES

COMPOUND	LD ⁵⁰ VALUE Mg./Kg. (rats)
Dimethrin	40,000
Captan	15,000
Tedion or tetradifom	14,700 (gave no mortality)
Piperonyl butoxide	11,500
ferbam	11,000
chlorbenside	10,000
perthane	8,500
dimethyl phthalate	8,200
Tabutrex	8,000
maneb	7,500
mirex	6,000
BHC (beta isomer)	6,000
methoxychlor	6,000
Neotran	5,800
piperonyl cycloene	5,200
zineb	5,200
simazine	5,000 (mice)
phenothiazine	5,000
Dithane	5,000
sabadilla	4,000
Prolan	4,000
ammate	3,900
Aramite	3,900
DDD or TDE	3,400
Pentac	3,160
fluoribenside	3,000
Dyrene	2,710
Phostex	2,500
ethyl hexanediol	2,400
ovex or Ovcotran	2,050
sulfoxide	2,000
ronnel or Korlan	1,740
Thanite	1,600
Phygon	1,500
Cyprex	1,000-2,000
malathion	1,500
Genite	1,400
ziram	1,400
Sulphenone	1,400-3,650
fenson	1,350-1,740
Dilan	1,100
BHC (delta isomer)	1,000
Ruelene	950
chlorthion	930
Vapam	820
pyrethrins	820
Thiram	780
ryania	750
Karathane	714
chlorobenzilate	702

**FIGURE 115-1—Continued
LD⁵⁰ INDEX OF CHEMICALS**

COMPARATIVE INSECTICIDE, FUNGICIDE, HERBICIDE, AND RODENTICIDE TOXICITIES

COMPOUND	LD ⁵⁰ VALUE Mg./Kg. (rats)
allethrin	680
Kelthane	575
Sevin or carbaryl	540
BHC (alpha isomer)	500
2,4,d*	500
Dimete or DMC	500
dicapthon	475 (mice)
Dipterex or Dylox	450
Dibrom or naled	430
Bandane	396
nabam	395
chlordan	382
DN-111	330
Bulan	330
fenthion or Baytex	310
red squill	300
2,4,5,T*	300
Zytron	270
VC-13	270
Strobane	250
DDT	250
dimethoate	245
ethion (purified)	208
cryolite	200
sodium fluoride	200
Morocie or binapacryl	165
warfarin	160
Diazinon	150
imidan	147
rotenone	132
ciodrin	125
lindane (gamma BHC)	125
Delnav	110
Thiodan or endosulfan	110
lead arsenate	100
Kepone	95
heptachlor	90
Lethane 384	90
Meta-Systox-R	85
DDVP	80
toxaphene	69
Dimetilan	65
heptachlor epoxide	61 (male rats)
Co-Ral	56-230
isolan	54
EPN	52.9
nicotine	50-230
zinc phosphide	50-60
dieldrin	46
DNOSBO/Elegetol 318	40

**FIGURE 115-1—Continued
LD⁵⁰ INDEX OF CHEMICALS**

COMPARATIVE INSECTICIDE, FUNGICIDE, HERBICIDE, AND RODENTICIDE TOXICITIES

COMPOUND	LD⁵⁰ VALUE Mg./Kg. (rats)
aldrin	40
Trithion	30
thallous sulfate	25
Paris green	22
calcium arsenate	20
Phosphamidon	16.8
strychnine	16.2
methyl parathion	15.2
Zectran	15-63
Guthion	15-25
arsenic trioxide	13
endrin	12.6
Di-Syston	12.5
demeton or Systox	12.0
Bayer #25141	8.3
parathion	8.3
Antu	6
Phosdrin	6
sulfotepp	5
dimofox	5
telodrin	4.8-5.5
phorate or Thimet	3.7
Tetram	3
TEPP	1.6
1080 or sodium fluroacetate	1.2

*Non-toxic to mammals at dosages toxic to plants

FIGURE 115-2 SAMPLE DUPLICATE CERTIFICATE

DOT
LOGO

OPERATING CERTIFICATE

(Type the word **DUPLICATE** prominently
on the certificate)

This certifies that

(Enter company name)
(Enter address of principal base of operations)

(Enter Private or Commercial Agricultural Operator, as appropriate)

has met the requirements of the Federal Insecticide, Fungicide, and Rodenticide Act of 1958, as amended, at the rules, regulations, and standards prescribed therein, for the issuance of this certificate and is authorized to operate as a private operator and conduct

in accordance with said Act and its rules, regulations, and standards;

(Enter, Dispensing of Economic Poisons Allowed, or, Dispensing of Economic Poisons Prohibited, as appropriate)

This certificate is not transferable and, unless canceled, suspended, superseded, or revoked, shall continue in effect (Enter the word, indefinitely.)
By Direction of the Administrator.

Certificate (Enter number) (Have district office manager sign)
number: from original certificate _____
(Signature)

(Enter original certificate date)

Effective date: _____

District office manager's title
(Title)

Issued at: FSDO acronym, city, and state

FAA Form 8430-21 (12-86)

FIGURE 115-4
LETTER ADVISING APPLICANT OF REASONS FOR DENYING AMENDMENTS

Dusty R. Swath
Agrispray
123 Ag Way
Tulsa OK 77989

Dear Mr. Swath:

We are returning your application for amendment of your commercial agricultural operator's certificate. Your request to add the dispensing of economic poisons is denied because your personnel, Mr. Tyson Blue and Mr. Randy Andrews, failed to meet the knowledge requirements of FAR § 137.19 regarding economic poisons.

We will be happy to accept a new application and reexamine Mr. Blue and Mr. Andrews after these deficiencies have been corrected.

Sincerely,

[district office manager's signature]

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