

MEETING UPDATED COMPETENCY STANDARDS FOR CERTIFIED PESTICIDE APPLICATORS

To comply with the 2017 revision of 40 CFR Part 171.103



A guide for certifying authorities to evaluate, update, or create training materials and/or certification exam content to identify and fill potential gaps



PERC

Pesticide Educational
Resources Collaborative

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Meeting Updated Competency Standards for Certified Pesticide Applicators to comply with the 2017 revision of 40 CFR Part 171.103

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How to Use This Document

This guide is intended as a guide for states, tribes, territories, and any certifying authority that seeks to comply with federal competency standards (40 CFR 171.103) for certified pesticide applicators, both private and commercial. When revised in 2017, there was a multi-year timeline for state and federal agencies to enact improvements to meet the new standard(s).

Some states/tribes/territories rely on a **National Pesticide Applicator Certification Core Manual, 2nd. Edition (2014)** and an accompanying exam (housed with the US Environmental Protection Agency (EPA), Office of Pesticide Programs) to train commercial pesticide applicators, while many do not. Many states have created their own manuals, courses, and exams that meet national core training requirements in a locally relevant way, incorporating native pest biology information and local regulations. This is especially the case for training materials, courses, manuals, and exams intended for private pesticide applicators seeking initial certification. There is no standard, national study manual for this purpose.

This guide is intended to help educators and regulatory agencies evaluate any potential gaps in existing training programs/content for private and/or commercial pesticide applicators seeking initial certification.

If any gaps are identified, the guide includes a set of suggested text that would meet federal requirements.

- Use the content in this guide to develop a one-time refresher course for certified applicators in your state/tribe/territory. It would only include the items you're currently missing.
- Use the content in this guide to revise your training manuals, modules, course content, and regulatory addenda, as applicable.

The National Pesticide Applicator Certification Core Manual 2nd Ed. (2014) will be revised by the Pesticide Educational Resources Collaborative (PERC) during the project period 2021-2026. It will include all of the competencies described in 40 CFR 171.103 after the 2017 revision. The competency standards are more aligned between private and commercial pesticide applicators, after the revision of the rule. You might consider adopting the new, revised manual/exam for both private and commercial pesticide applicators in your state/tribe/territory when it is released. For more information, please visit <http://pesticideresources.org> or email PERCsupport@ucdavis.edu.

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UPDATES AT-A-GLANCE		
Part 1. Commercial Applicator Content Comparison with Draft Content to Fulfill Federal Requirements	Core Manual meets 2017 requirements	Fresh content available from PERC to meet federal requirements
Unit 1. Pesticide Labels	Yes	
Unit 2. Safety Precautions	Yes	
Unit 3. Symptoms of Pesticide Poisoning	Yes	
Unit 4. First Aid and other Procedures in Case of a Pesticide Mishap	Yes	
Unit 5. Disposal Procedures	Yes	
Unit 6. Environmental Consequences of the Use or Misuse of Pesticides	Yes	
Unit 7. Pests	Yes	
Unit 8. Pesticide Characteristics	Yes	
Unit 9. Equipment	Yes	
Unit 10. Application Methods	Yes	
Unit 11. Laws and Regulations	Yes	
Unit 12. Supervising Non-Certified Applicators	No	Pages 16-22
Unit 13. Professionalism	No	Pages 22-23
Part 2. Private Pesticide Applicator Content Comparison with Draft Content to Fulfill Federal Requirements	Were standards updated significantly?	Fresh content available from PERC to meet federal requirements
Unit 1. Pesticide Labels	Yes	Pages 24-31
Unit 2. Safety Precautions	Yes	Pages 31-34
Unit 3. Symptoms of Pesticide Poisoning	Yes	Pages 35-36
Unit 4. First Aid and other Procedures in Case of a Pesticide Mishap	No	
Unit 5. Disposal Procedures	Yes	Pages 37-41
Unit 6. Environmental Consequences of the Use or Misuse of Pesticides	Yes	Pages 41-43
Unit 7. Pests	Yes	Pages 43-44
Unit 8. Pesticide Characteristics	Yes	Pages 44-49
Unit 9. Equipment	Yes	Refer to Core Manual Chapter 11
Unit 10. Application Methods	Yes	Pages 50-53
Unit 11. Laws and Regulations	Yes	Pages 54-56

Unit 12. Supervising Non-Certified Applicators	All new	Pages 56-61
Unit 13. Stewardship	All new	Pages 62-63
This column refers to the 2014 National Pesticide Applicator Certification Core Manual		

Part 1. Commercial Applicator Content Comparison with Draft Content to Fulfill Federal Requirements

All certifying authorities have EPA-required certification plans explaining how their certification programs meet the federal standards, including training materials. Some states/tribes/territories rely on a **National Pesticide Applicator Certification Core Manual, 2nd. Edition (2014)** and an accompanying exam (housed with the US Environmental Protection Agency (EPA), Office of Pesticide Programs) to train commercial pesticide applicators. Many states have created their own manuals, courses, and exams that meet national core training requirements in a locally-relevant way, incorporating native pest biology information and local regulations. Previously, each certifying authority submitted written certification plans to EPA affirming the adequacy of training materials in use.

For commercial pesticide applicators, there may be very few additional competencies. This is the case if your existing training materials for commercial pesticide applicators seeking initial certification meet the old requirements under 40 CFR 171.101.

Sample content is provided to meet federal competency requirements for commercial pesticide applicators in this section.

- Evaluate current training materials using the table at the beginning of each unit.
- Identify any required content that is missing from current training materials.

- Insert or adapt training content to fill identified gaps from a) this document for units 12 and 13 or b) the National Pesticide Applicator Certification Core Manual (2nd. Ed., 2014).

UNIT 1. PESTICIDE LABELS

Unit 1: Pesticide labels	
Old, required content under 40 CFR 171.4(c)(1)	<ol style="list-style-type: none">1. "... practical knowledge of the principles and practices of pest control and safe use."<ol style="list-style-type: none">i. The general format and terminology of pesticide labels and labelinga) Understanding instructions, warnings, terms, symbols, and other information commonly appearing on pesticide labels and labeling."b) necessity for use according to the labelc) classification of the product, general or restricted
Updated content under 40 CFR 171.103(d)(1) More detailed competencies	<ol style="list-style-type: none">1. Label and labeling comprehension. Familiarity with pesticide labels and labeling and their functions, including all of the following:<ol style="list-style-type: none">i. The general format and terminology of pesticide labels and labeling.ii. Understanding instructions, warnings, terms, symbols, and other information commonly appearing on pesticide labels and labeling.iii. Understanding that it is a violation of Federal law to use any registered pesticide in a manner inconsistent with its labeling.iv. Understanding labeling requirements that a certified applicator must be physically present at the site of the applicationv. Understanding labeling requirements for supervising noncertified applicators working under the direct supervision of a certified applicator.vi. (vi) Understanding that applicators must comply with all use restrictions and directions for use contained in pesticide labels and labeling, including being certified in the certification category appropriate to the type and site of the application

	<ul style="list-style-type: none"> vii. Understanding the meaning of product classification as either general or restricted use, and that a product may be unclassified. viii. Understanding and complying with product-specific notification requirements. ix. Recognizing and understanding the difference between mandatory and advisory labeling language."
All federally required information is addressed in the National Pesticide Applicator Core Manual.	

UNIT 2. SAFETY PRECAUTIONS

Unit 2: Safety precautions	
Old required content under 40 CFR 171.4.(c)(1)	<ul style="list-style-type: none"> (ii) Safety. Factors including <ul style="list-style-type: none"> (a) Pesticide toxicity and hazard 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 equipment
Update required content under 40 CFR 171.103(d)(1)	<p>"(2) <i>Safety</i>. Measures to avoid or minimize adverse health effects, including all of the following:</p> <ul style="list-style-type: none"> (i) Understanding the different natures of the risks of acute toxicity and chronic toxicity, as well as the long-term effects of pesticides. (ii) Understanding that a pesticide's risk is a function of exposure and the pesticide's toxicity. (iii) Recognition of likely ways in which dermal, inhalation, and oral exposure may occur.

More detailed competencies	(iv) Common types and causes of pesticide mishaps. (v) Precautions to prevent injury to applicators and other individuals in or near treated areas. (vi) Need for, and proper use of, protective clothing and personal protective equipment."
All federally-required information is addressed in the National Pesticide Applicator Core Manual.	

UNIT 3. SYMPTOMS OF PESTICIDE POISONING

Unit 3: Symptoms of pesticide poisoning	
Old required content under 40 CFR 171.4.(c)(1)	(2) "... recognize poisoning symptoms..."
Updated required content under 40 CFR 171.103(d)(1)	"(2)(vii) Symptoms of pesticide poisoning."
All federally-required information is addressed in the National Pesticide Applicator Core Manual.	

UNIT 4. FIRST AID AND OTHER PROCEDURES IN CASE OF A PESTICIDE MISHAP

Unit 4: First aid and other procedures in case of a pesticide mishap	
Old required content under 40 CFR 171.4.(c)(1)	(2) "... procedures to follow in case of a pesticide mishap..."
Updated required content under 40 CFR 171.103(d)(1)	"(2)(viii) First aid and other procedures to be followed in case of a pesticide mishap..."
All federally-required information is addressed in the National Pesticide Applicator Core Manual.	

UNIT 5. DISPOSAL PROCEDURES

Unit 5: Disposal procedures	
Old required content under 40 CFR 171.4.(c)(1)	(2) "... specific disposal procedures..."
Updated required content under 40 CFR 171.103(d)(1)	"(2)(ix) 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."

More detailed
competencies

All federally-required information is addressed in the National Pesticide Applicator Core Manual.

UNIT 6. ENVIRONMENTAL CONSEQUENCES OF THE USE OR MISUSE OF PESTICIDES

Unit 6: Environmental consequences of the use or misuse of pesticides

Old required
content under
40 CFR
171.4.(c)(1)

(4) "Recognize local environmental situations that must be considered during application to avoid contamination."

Updated
required
content under
40 CFR
171.103(d)(1)

(3) "*Environment*. The potential environmental consequences of the use and misuse of pesticides, including the influence of the following:
(i) Weather and other indoor and outdoor climatic conditions.
(i) Types of terrain, soil, or other substrate.
(iii) Presence of fish, wildlife, and other non-target organisms.
(iv) Drainage patterns."

More detailed
competencie
s

All federally-required information is addressed in the National Pesticide Applicator Core Manual.

UNIT 7. PESTS

Unit 7: Pests	
Old required content under 40 CFR 171.4.(c)(1)	(iv) "Pests. Factors such as: a) Common features of pest organisms and characteristics of damage needed for pest recognition b) Recognition of relevant pests
Updated required content under 40 CFR 171.103(d)(1) More detailed competencies	(4) " Pests. The proper identification and effective control of pests, including all of the following: (i) The importance of correctly identifying target pests and selecting the proper pesticide product(s) for effective pest control. (ii) Verifying that the labeling does not prohibit the use of the product to control the target pest(s)."
All federally-required information is addressed in the National Pesticide Applicator Core Manual.	

UNIT 8: PESTICIDE CHARACTERISTICS

Unit 8: Pesticide characteristics	
Old required content under 40 CFR 171.4.(c)(1)	(v) " Pesticides. Characteristics of pesticides, including all of the following: (a) Types of pesticides. (b) Types of formulations. (c) Compatibility, synergism, persistence, and animal and plant toxicity of the formulations. (d) Hazards and residues associated with use.

Updated required content under 40 CFR 171.103(d)(1)	(5) “ Pesticides. Characteristics of pesticides, including all of the following: (i) Types of pesticides. (ii) Types of formulations. (iii) Compatibility, synergism, persistence, and animal and plant toxicity of the formulations. (iv) Hazards and residues associated with use. (v) Factors that influence effectiveness or lead to problems such as pesticide resistance. (vi) Dilution procedures.”
More detailed competencies	
All federally-required information is addressed in the National Pesticide Applicator Core Manual.	

UNIT 9. EQUIPMENT

Unit 9: Equipment	
Old required content under 40 CFR 171.4.(c)(1)	(6) “ Equipment. Application equipment, including all of the following: (i) Types of equipment and advantages and limitations of each type. (ii) Uses, maintenance, and calibration procedures.”
Updated required content under 40 CFR 171.103(d)(1)	(6) “ Equipment. Application equipment, including all of the following: (i) Types of equipment and advantages and limitations of each type. (ii) Uses, maintenance, and calibration procedures.”
All federally-required information is addressed in the National Pesticide Applicator Core Manual.	

UNIT 10. APPLICATION METHODS

Unit 10: Application methods.	
Old required content under 40 CFR 171.4.(c)(1)	(7) “ Application techniques, including Selecting appropriate application methods, including all of the following: (i) Methods of procedure used to apply various formulations of pesticides, solutions, and gases... (ii) ... together with a knowledge of which technique of application to use in a given situation; (iii) Relationship of discharge and placement of pesticides to proper use, unnecessary use, and misuse. (iv) Prevention of drift and pesticide loss into the environment.”
Updated required content under 40 CFR 171.103(d)(1) More detailed competencies	(7) “ Application methods. Selecting appropriate application methods, including all of the following: (i) Methods used to apply various forms and formulations of pesticides. (ii) Knowledge of which application method to use in a given situation and that use of a fumigant, aerial application, or predator control device containing sodium cyanide or sodium fluoroacetate requires additional certification. (iii) How selection of application method and use of a pesticide may result in proper use, unnecessary or ineffective use, and misuse. (iv) Prevention of drift and pesticide loss into the environment.”
All federally-required information is addressed in the National Pesticide Applicator Core Manual.	

UNIT 11. LAWS AND REGULATIONS

Unit 11: Laws and Regulations	
Old required content under 40 CFR 171.4.(c)(1)	(8) "Laws and regulations. Applicable State and Federal laws and regulations"
Updated required content under 40 CFR 171.103(d)(1)	(8) "Laws and regulations. Knowledge of all applicable State, Tribal, and Federal laws and regulations."
All federally-required information is addressed in the National Pesticide Applicator Core Manual.	

UNIT 12. SUPERVISING NON-CERTIFIED APPLICATORS

This activity, allowing non-certified applicators to apply restricted-use pesticides (RUPs) under the supervision of a certified applicator, is not allowed in several states. If it is allowed in your jurisdiction, this section contains new information and requirements for your certified applicator community.

Unit 12: Supervising non-certified applicators	
Old required content under 40 CFR 171.4.(c)(1)	None
Updated required content under	(9) Responsibilities of supervisors of noncertified applicators. Knowledge of the responsibilities of certified applicators supervising noncertified applicators, including all of the following:

40 CFR 171.103(d)(1)	<p>(i) Understanding and complying with requirements in § 171.201 of this part for certified commercial applicators who supervise noncertified applicators using restricted use pesticides.</p> <p>(ii) The recordkeeping requirements of pesticide safety training for noncertified applicators who use restricted use pesticides under the direct supervision of a certified applicator.</p> <p>(iii) Providing use-specific instructions to noncertified applicators using restricted use pesticides under the direct supervision of a certified applicator.</p> <p>(iv) Explaining pertinent State, Tribal, and Federal laws and regulations to noncertified applicators who use restricted use pesticides under the direct supervision of a certified applicator.</p>
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New content: Consider using or adapting this content to fill gaps in training

Responsibilities for supervisors of non-certified applicators

Some states/tribes/territories allow certified pesticide applicators to supervise the application of restricted-use pesticides by non-certified applicators.

As the supervising certified applicator, you must:

- Be licensed to perform the type of application being performed, including any required categories or endorsements. For example, if you are supervising the use of a restricted-use product to control a pest on turf, you must be certified in 'ornamental and turf' pest control or a similar certification category.
- Be physically present at the site where the restricted use pesticide is applied when required by product labeling.
- Ensure that the non-certified applicator is at least 18 years old.
- Ensure that the non-certified applicator has clean Personal Protective Equipment (PPE) as specified on the label and it is in proper operating condition.

- Ensure that the non-certified applicator uses required PPE properly for its intended purpose.
- Ensure that the non-certified applicator has access to the product's labeling at all times during the application.
- Ensure that all equipment is in proper working condition prior to each day of use.
- Ensure that the equipment can be used without risk of reasonably foreseeable harm to either the non-certified applicator, other people, or the environment.
- Ensure that immediate communication is possible between the supervising certified applicator and the non-certified applicator(s). Properly charged cell phones could meet this criterion if signal strength is sufficient and phones are continuously available.
- Ensure that the non-certified applicator has been instructed in the last 12 months of the safe and proper use of any equipment needed for the application. Training on application equipment must take place before the noncertified applicator makes any application of a restricted-use pesticide.
- Ensure that the non-certified applicator received sufficient pesticide safety training, as described in the following section.

Pesticide safety training for non-certified applicators under your supervision
The non-certified applicator must have pesticide safety training at least every 12 months. Alternatively, they may also be a certified applicator who a) isn't certified to perform that particular application or b) isn't certified within the jurisdiction where the application will take place.

The pesticide safety training requirement is met by either:

- taking a non-certified applicator training course such as Pesticide Safety Training for Noncertified Applicators Using Restricted Use Pesticides at Nonagricultural Sites, which is available online at <http://pesticideresources.org/ct/rup.html>
- taking an agricultural handler training course [as specified by 40 CFR 170.501], such as those listed here: <http://pesticideresources.org/wps/jfy/toh/index.html>, or
- taking another course approved by a certifying authority [40 CFR 171.201(c)(1)].

The trainer must be qualified and the content must be complete according to the federal regulations. Training can be conducted by someone who is currently certified as an applicator of restricted-use pesticides. It can also be done by someone who is a trainer of certified applicators or pesticide handlers. The trainer may also have completed an EPA-approved train-the-trainer course in pesticide safety for trainers of handlers. Additionally, a certifying authority such as a state, tribe, or territory, may designate a person as a qualified trainer.

The information that must be included in the training is specified by law, and must include all of the information the non-certified applicator will need to keep themselves, anyone else, and the environment from harm.

The non-certified applicator training materials must include, at a minimum, the following: (40 CFR 171.201d(3))

- i. Potential hazards from toxicity and exposure that pesticides present to non-certified applicators and their families, including acute and chronic effects, delayed effects, and sensitization.
- ii. Routes through which pesticides can enter the body.
- iii. Signs and symptoms of common types of pesticide poisoning.
- iv. Emergency first aid for pesticide injuries or poisonings.
- v. Routine and emergency decontamination procedures, including emergency eye flushing techniques. Non-certified applicators must be instructed that if pesticides are spilled or sprayed on the body, to immediately wash or to rinse off in the nearest clean water. Non-certified applicators must also be instructed to wash or shower with soap and water, shampoo hair, and change into clean clothes as soon as possible.
- vi. How and when to obtain emergency medical care.
- vii. After working with pesticides, wash hands before eating, drinking, using chewing gum or tobacco, or using the toilet.
- viii. Wash or shower with soap and water, shampoo hair and change into clean clothes as soon as possible after working with pesticides.
- ix. Potential hazards from pesticide residues on clothing.
- x. Wash work clothes before wearing them again and wash them separately from other clothes.
- xi. Do not take pesticides or pesticide containers used at work to your home.
- xii. Potential hazards to children and pregnant women from pesticide exposure.

- xiii. After working with pesticides, remove work boots or shoes before entering your home, and remove work clothes and wash or shower before physical contact with children or family members.
- xiv. How to report suspected pesticide use violations to the appropriate State or Tribal agency responsible for pesticide enforcement.
- xv. Format and meaning of information contained on pesticide labels and in labeling applicable to the safe use of the pesticide, including the location and meaning of the restricted use product statement, how to identify when the labeling requires the certified applicator to be physically present during the use of the pesticide, and information on personal protective equipment.
- xvi. Need for, and appropriate use and removal of, personal protective equipment.
- xvii. How to recognize, prevent, and provide first aid treatment for heat-related illness.
- xviii. Safety requirements for handling, transporting, storing, and disposing of pesticides, including general procedures for spill cleanup.
- xix. Environmental concerns such as drift, runoff, and wildlife hazards.
- xx. Restricted use pesticides may be used only by a certified applicator or by a non-certified applicator working under the direct supervision of a certified applicator.
- xxi. The certified applicator's responsibility to provide to each non-certified applicator instructions specific to the site and pesticide used. These instructions must include labeling directions, precautions, and requirements applicable to the specific use and site, and how the characteristics of the use site (e.g., surface and groundwater, endangered species, local population, and risks) and the conditions of application (e.g., equipment, method of application, formulation, and risks) might increase or decrease the risk of adverse effects. The certified applicator must provide these instructions in a manner the non-certified applicator can understand.
- xxii. The certified applicator's responsibility to ensure that each non-certified applicator has access to the applicable product labeling at all times during its use.
- xxiii. The certified applicator's responsibility to ensure that where the labeling of a pesticide product requires that personal protective equipment be worn for mixing, loading, application, or any other use activities, each non-certified applicator has clean, labeling-required personal protective

equipment in proper operating condition and that the personal protective equipment is worn and use correctly for its intended purpose.

- xxiv. The certified applicator's responsibility to ensure that before each day of use equipment used for mixing, loading, transferring, or applying pesticides is in proper operating condition as intended by the manufacturer, and can be used without risk of reasonably foreseeable adverse effects to the non-certified applicator, other persons, or the environment.
- xxv. The certified applicator's responsibility to ensure that a means to immediately communicate with the certified applicator is available to each non-certified applicator using restricted use pesticides under his or her direct supervision.

In addition to the training concepts above, you are also responsible for providing **use-specific** instructions to the non-certified applicator for the restricted-use pesticide, and explaining any federal, state, or tribal regulations relevant for the application. For example, provide precautions and requirements applicable to the specific use and site, the conditions of the application, and actions that could increase or decrease the risk of adverse effects.

Recordkeeping

- i. In addition to the other requirements listed above, you will need to ensure that all required records are kept if you are supervising a noncertified applicator using a restricted-use pesticide. This includes detailed documentation of the safety training provided to the noncertified applicator. It is your responsibility to create or verify the existence of the training record before allowing the noncertified applicator to use a restricted-use pesticide under your supervision.

Training records must include: (40 CFR 171.103(e)(1)(i))

- The noncertified applicator's printed name and signature
- The date the training requirement was completed
- The name of the trainer
- The title or description of the training provided

If you used a piece of training material for agricultural handlers under the Worker Protection Standard (WPS), the record must contain all of the information required

under that rule, including the trainer's qualification to train, and the EPA approval number for the training material(s).

If you used another piece of training material approved by a local authority, the record must be complete according to the authority's published rules. If the noncertified applicator is actually certified in another category/type of pesticide application, annual training is not required. However, the supervising certified applicator must keep a record including the noncertified applicator's name, certification number, expiration date, and the name of the certifying authority that issued the certification.


UNIT 13. PROFESSIONALISM

Unit 13: Professionalism	
Old required content under 40 CFR 171.4.(c)(1)	None
Updated required content under 40 CFR 171.103(d)(1)	(10) Professionalism. Understanding the importance of all of the following: (i) Maintaining chemical security for restricted use pesticides. (ii) How to communicate information about pesticide exposures and risks with customers and the public. (iii) Appropriate product stewardship for certified applicators.

New content: Consider using or adapting this content to fill gaps in training

Professionalism

Professionalism is expected for certified pesticide applicators because your work has the potential to cause significant harm. You decide what to apply, and how. You work in some sensitive sites, managing complex considerations from the



customer(s), neighbors, and others. Sometimes the situation may call for more caution than the label (the law) requires, and it's up to you to exercise that caution using your best judgment and high standards of professionalism. When things go wrong, and professionals are involved, the public can lose faith in our ability to use chemicals with the necessary caution and care. Do your part to set and hold high standards, promoting a culture of caution in your organization(s).

Professionalism for commercial certified applicators includes maintaining site-security for restricted-use pesticides. Pesticides may be desirable targets for theft and potentially, misuse.

General storage requirements for pesticides in containers of 55 gallons or smaller are specified by the product labeling.

- Pesticide storage facilities should be locked at all times unless they are under the direct supervision of someone who is authorized to enter.
- The storage area should only be accessible to authorized employees. Installation of security lighting and an alarm system may be considered.

Communicating information about pesticide risks and exposures is not limited to audiences of agricultural workers and handlers, but includes customers and the general public, who might be far less knowledgeable about pesticides, the risks they pose, and what actions can be taken to reduce those risks. Resources such as the National Pesticide Information Center are particularly helpful for learning how to communicate risk and risk reduction to the general public.

Open and honest communication builds trust, and it builds the knowledge-base of the workforce. When talking about safety, try to avoid absolute terms. As you know, chemicals are not simply 'toxic' or 'non-toxic' because the amount of exposure also determines the risk(s). Ask questions to clarify their viewpoint and concerns as needed. If appropriate, call attention to shared experiences. Tell people what you've already done to keep the risks as low as possible, and encourage them to do their part by following proper safety practices.

This unit includes content adapted from the NPIC fact sheet, "Is it Safe? Tips for Talking About Pesticide Risk with the Public."
<http://npic.orst.edu/factsheets/isitsafe.html>

Part 2. Private Pesticide Applicator Content Comparison with Draft Content to Fulfill Federal Requirements

While many **commercial** pesticide applicators prepare for initial certification using the National Pesticide Applicator Certification Core Manual (2004), most **private** pesticide applicators do not. A wide variety of training materials have been developed that meet local needs, including several training manuals/programs that are specific to the state/tribe/territory. Some are more detailed than others. For this reason, gaps may exist for private applicators that did not exist for commercial applicators. Sample content is provided to meet federal competency requirements for private applicators in this section.

- Evaluate current training materials using the table at the beginning of each unit.
- Identify any required content that is missing from current training materials.
- Insert or adapt training content from this document to fill identified gaps.

UNIT 1. PESTICIDE LABELS

Old required content under 40 CFR 171.5(a)	(2) Read and understand the label and labeling information, including the common name of pesticides to be applied, pests to be controlled...
Updated required content under 40 CFR 171.105(a) More detailed competencies	“(1) Label and labeling comprehension. Familiarity with pesticide labels and labeling and their functions, including all of the following: (i) The general format and terminology of pesticide labels and labeling. (ii) Understanding instructions, warnings, terms, symbols, and other information commonly appearing on pesticide labels and labeling. (iii) Understanding that it is a violation of Federal law to use any registered pesticide in a manner inconsistent with its labeling.

	<p>(iv) Understanding when a certified applicator must be physically present at the site of the application based on labeling requirements.</p> <p>(v) Understanding labeling requirements for supervising noncertified applicators working under the direct supervision of a certified applicator.</p> <p>(vi) Understanding that applicators must comply with all use restrictions and directions for use contained in pesticide labels and labeling, including being certified in the appropriate category to use restricted use pesticides for fumigation or aerial application, or predator control devices containing sodium cyanide or sodium fluoroacetate, if applicable.</p> <p>(vii) Understanding the meaning of product classification as either general or restricted use, and that a product may be unclassified.</p> <p>(viii) Understanding and complying with product-specific notification requirements.</p> <p>(ix) Recognizing and understanding the difference between mandatory and advisory labeling language.”</p>
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New content: Consider using or adapting this content to fill gaps in training

The Pesticide Label

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) defines pesticide labels and labeling. A label is “the written, printed, or graphic matter on, or attached to, the pesticide or device or any of its containers or wrappers.” Labeling includes the label. It also includes “all other written, printed, or graphic matter” that comes with the product. If the label refers to any additional information, that information is also part of the labeling. There may be only a label for a product with no other labeling. You must make sure you read not only the container label, but any other labeling that came with the product.

The label is considered a legal document. This is why all pesticide labels carry the statement, “It is a violation of federal law to use this product in a manner that is inconsistent with its labeling.” Labeling is reviewed and accepted by the EPA during the product registration process. Following the label directions is vital to ensure that the product doesn’t pose unreasonable risks to people or the environment. Pesticide labels are enforceable legal documents. You must follow the label on the container that you are using. In other words, the label is the law.

All pesticide labels must carry the same basic information. The EPA’s Label Review Manual tells manufacturers exactly what they must include on a label and where it must be placed. The manual even specifies how big the font must be. The titles of label sections may vary, but the same sections will be present. This is true even though some pesticide labels are fairly simple, while others are long and complicated.

Some information is required to appear on the front panel of a pesticide label. If a pesticide is a restricted-use product, it will say so on the front panel. You will also find the product name, the ingredient statement, and “Keep Out of Reach of Children.”. This statement may sometimes be left out if the product’s toxicity is very low. The signal word is always placed on the front panel in all caps (i.e. ALL CAPS). The signal word can be omitted only if the product is very low in toxicity.

The label must include the EPA registration number, which is unique to each registered pesticide product. If two products are labeled with the same EPA registration number, the formulations must be identical. The labels’ directions may vary.

For Your Information

“Signal words are found on pesticide product labels, and they describe the acute (short-term) toxicity of the formulated pesticide product. The signal word can be either: DANGER, WARNING or CAUTION. Products with the DANGER signal word are the most toxic. Products with the signal word CAUTION are lower in toxicity.”

– NPIC Fact Sheet

<http://npic.orst.edu/factsheets/signalwords.html>

The EPA establishment number identifies the facility where the product was made. The company name and address must be on the label. The EPA does not specify where any of this information must be placed, however.

Hazard and precautionary statements will appear under the heading "Precautionary Statements." If a product poses an acute hazard to people or domestic animals, a label must have the heading, "Hazards to humans and domestic animals." This section will describe the particular hazard posed by the product. The section will include steps on how to avoid the hazard. First aid instructions are required on almost all pesticide product labels. They will be on the front panel when the product is highly toxic. Products in the lowest class of toxicity, do not need to have a signal word or first aid information.

FIRST AID [Class of Pesticide]	
If inhaled	<ul style="list-style-type: none"> •Move person to fresh air. •If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. •Call a poison control center or doctor for further treatment advice.
If on skin or clothing	<ul style="list-style-type: none"> •Take off contaminated clothing. •Rinse skin immediately with plenty of water for 15-20 minutes. •Call a poison control center or doctor for treatment advice.
If in eyes	<ul style="list-style-type: none"> •Hold eye open and rinse slowly and gently with water for 15-20 minutes. •Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. •Call a poison control center or doctor for treatment advice.
If swallowed	<ul style="list-style-type: none"> •Call poison control center or doctor immediately for treatment advice. •Have person sip a glass of water if able to swallow.* •Do not induce vomiting unless told to do so by the poison control center or doctor. •Do not give anything by mouth to an unconscious person. <p><i>*The statements for products containing petroleum distillates may be different.</i></p>
HOT LINE NUMBER [Class of Pesticide]	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-xxx-xxxx for emergency medical treatment information.	
NOTE TO PHYSICIAN [Insert appropriate information here.]	

Image from PR Notice 2001-1

<https://www.epa.gov/sites/default/files/2014-04/documents/pr2001-1.pdf>

If the product poses hazards to the environment, a section headed “Environmental Hazards” is required. For example, there may be a statement such as, “this product is toxic to bees.” There, the product will list steps that reduce the hazard. A physical or chemical hazards statement is required if the product poses risks because of chemical characteristics or if it is flammable or explosive. Finally, there will be instructions for Storage and Disposal. All of these label sections are in addition to the Directions for Use.

If there is too much text to fit on the container, a label booklet may be used. Most, but not all, label sections can be found in the label booklet. This booklet can be taken off the container. However, certain information must appear on the pesticide container. For example, the ingredient statements, net weight or net contents, and storage/disposal information must be preserved even if the booklet is removed.

The Occupational Safety and Health Administration, or OSHA, requires a Safety Data Sheet or SDS. These were previously known as a Material Safety Data Sheets or MSDS. The SDS is part of OSHA’s Hazard Communication Standard. OSHA has modified its Hazard Communication Standards to meet those outlined in the Globally Harmonized System of Classification and Labelling of Chemicals. This means that the SDS may contain different information than the pesticide label, including how hazards are identified. The signal words also differ, as SDS have only WARNING and DANGER as signal words, but pesticide labels also have the signal word of CAUTION. Although any SDS sold with a product is considered part of the pesticide product’s labeling, it is not a substitute for the rest of the label [source: PR Notice 2012-1 Material Safety Data Sheets as Pesticide Labeling]. The US EPA tells pesticide manufacturers how to address any apparent conflicts between the product’s label and its SDS.

Some pesticide products include notification requirements on the product label. For example, fumigants require the applicator to post warning signs around the application site(s). When required by the product labeling, notification activities are included in your application activities. If notification requirements are not met, the applicator may be found in violation of the pesticide label. Agricultural pesticides require notification activities for applicators, people who work in treated areas, equipment repair-people, and laundry handlers. Those



requirements are found in the Worker Protection Standard (WPS), which only applies in agricultural settings.


Product labels give specific instructions for the use of each product. You can recognize the instructions you must follow by the way they are written. As a licensed pesticide applicator, you already know it is a violation of Federal law to use a pesticide product in a manner inconsistent with its labeling.

Statements that include the words, “Must,” “Do,” or “Do not” are considered mandatory parts of the directions for use. Mandatory directions may include an explicit statement of action. Examples are “apply immediately after mixing,” “wear chemical-resistant gloves,” or “keep away from heat, sparks, or open flame.” All of these statements must be followed.

Some label statements are considered optional or advisory. Advisory statements are descriptive rather than directive. They describe actions that help keep application risks low and efficacy high. EPA reviews these statements to make sure they don’t conflict with the mandatory instructions. Examples of advisory statements include “latex gloves provide the best protection,” “the depth of treatment depends on the depth of the drain system, soil type, and degree of soil compaction,” or “Applying the product immediately after preparation will help to ensure that it is in suspension. If application is delayed, agitation to remix the products and checking for resuspension will ensure proper blending.” Following these statements is not strictly mandatory but is best practice.

The version of the pesticide label accepted by the EPA is the master label. This label has all of the allowed uses and their directions. The master label cannot be changed after the EPA has accepted it. Pesticide products are subject to state registration as well. Individual states may choose to require further restrictions, but they cannot relax any of the master label requirements.

In some cases, a pesticide product may not require registration by the EPA, but may be subject to state registration requirements. This may be true of products that are made up of ingredients from a specific list. These are sometimes referred to as “25(b) products” because that is the section in FIFRA that defines them. These products do not have an EPA registration number, but they must list all ingredients on their label.



Sometimes a manufacturer may split a master label so that some uses are listed on one version of the product label, and other uses and their associated instructions are on another version of the label. This is known as a sub-label or split label. Manufacturers may do this for marketing purposes. Although the contents of the container are identical in a split-label situation, the label on the container you are using is the one you must follow. If a supplemental label or packet comes with the product, that is also considered 'labeling.'

Question: Is the website labeling?

Answer: Yes, it is if the website is referenced on the label with a requirement to visit, read, and/or comply with guidance on the website.

Pesticide products are classified as restricted use, general use, or they may be unclassified. The restricted-use designation is for products that carry risk of unreasonable harm unless the person using them has special training. These products require special certification. Restricted-use products will state "Restricted Use" on the top of the front panel of the label. It is unlawful for pesticide dealers to distribute restricted-use pesticides to customers without proof of an active pesticide applicator's license.

All applicators must comply with all use restrictions, including certification requirements for every pesticide product they purchase and apply. For example, there are special certification requirements for predator control, fumigation, and the aerial application of pesticides. It is unlawful for a licensed pesticide applicator to apply pesticides by air without first obtaining the required certification(s) for that activity. The requirements for certification are specific to the use type/category. They include specific knowledge of the hazards each activity may pose to people and the environment, and how to manage them. Stand-alone courses and/or study materials are typically available to help an applicator learn the additional material.

As a certified applicator, private or commercial, your state may allow you to supervise unlicensed workers who apply restricted-use pesticides. If someone under your direction will be using a restricted-use pesticide, you will be the responsible applicator on record, and you may be required to be physically present during that application. The level of supervision will be specified either directly on the label of the restricted-use product label or by state regulations. The labels of the most toxic restricted-use products will require you to be physically present when someone is applying the product under your supervision.

Regardless of who is doing the application, however, you are responsible for the outcome if you are the certified applicator. Note that some restricted use pesticides cannot be applied by anyone other than the certified applicator.

UNIT 2. SAFETY PRECAUTIONS

Old required content under 40 CFR 171.5(a)	(2) "... safety precautions..."
Updated required content under 40 CFR 171.105(a) More detailed competencies	<p>"(2) Safety. Measures to avoid or minimize adverse health effects, including all of the following:</p> <ul style="list-style-type: none"> (i) Understanding the different natures of the risks of acute toxicity and chronic toxicity, as well as the long-term effects of pesticides. (ii) Understanding that a pesticide's risk is a function of exposure and the pesticide's toxicity. (iii) Recognition of likely ways in which dermal, inhalation, and oral exposure may occur. (iv) Common types and causes of pesticide mishaps. (v) Precautions to prevent injury to applicators and other individuals in or near treated areas. (vi) Need for, and proper use of, protective clothing and personal protective equipment."

New content: Consider using or adapting this content to fill gaps in training

Pesticide Safety

Adverse effects from pesticide use may be either acute or chronic. The terms acute and chronic may refer to the exposure to a pesticide as well. Acute means a sudden or brief event or illness. An acute exposure is one that happens as a single, defined incident. An acute pesticide illness is one where symptoms

develop in minutes, hours, or days after an exposure. It typically resolves by itself or following medical treatment, although pesticides may travel or stay in the body. Chronic exposure is an exposure that lasts for months or years, or it recurs repeatedly, and a chronic health effect is persistent. A chronic health effect can follow an acute exposure. Other long-term effects that may result from exposure to a pesticide include reproductive effects or cancer. For these reasons, it is vital that pesticide applicators understand the risks and how to reduce exposure.

Pesticides pose risks to people, non-target animals and plants, and the environment based on how toxic they are, and whether or not there is an exposure to the pesticide.

Risk = Toxicity x Exposure

You are exposed to a pesticide if you breathe it in, get it on your skin, or somehow eat or drink it. If there is no exposure, there is no risk. The more toxic the pesticide is, the greater the risk of an exposure. Duration of exposure also affects risk. If you are exposed to a pesticide for a longer period of time, the risk is greater. Toxicity varies, as well. For example, if a pesticide is very toxic if you breathe it in, the risk from inhalation exposure would be high. The same pesticide may not be as toxic if you get it on your skin. The risk of dermal exposure is lower than inhalation exposure.

There are a number of ways you could easily be exposed to a pesticide when you are using them. You can get pesticides on your skin when you mix, load, or apply pesticides, unless you are properly wearing a complete set of personal protective equipment (PPE). Sprays can drift back onto you when the wind changes or gusts. You can inhale pesticides when you smell fumigants, when spraying in enclosed spaces, and especially when fine dust or spray droplets hang in the air. You may ingest residues if you don't wash your hands thoroughly after handling or applying a pesticide. Residues may transfer from your hands onto food, beverages, or smoking materials. Failure to maintain equipment or to use it properly can cause unintended exposures to applicators or non-target sites. Mixing incompatible pesticides may damage equipment or cause injury.

There are a number of common pesticide mishaps.

- Mixing and loading mistakes lead to uncontained spills, splashes, and dribbles.
- Granules that have not been watered-in or properly dispersed may be eaten by pets or wildlife.
- Pets and people, especially children, may eat baits if they can reach them. Baits often have flavors like peanut butter. Pets or children may think they are snacks and work hard to get to them.
- If you allow an application to drift off site, it may lead to property damage and/or injury. To avoid accidents, always read and follow the label completely.
- Never use or leave pesticides within reach of children, pets, or others who might not recognize the danger. Think about who could be exposed, and take steps to prevent it.

Finally, pesticides may be eaten or drunk by accident. Never transfer a pesticide product into an unmarked container, particularly a food or drink container. Fatal accidents have occurred as a result of people storing pesticides in food/beverage containers.

You can take precautions that prevent injury to yourself and others. Think about nearby people, pets, livestock, pollinators, and water bodies.

- Avoid spraying in weather conditions that may cause pesticides to move offsite. This includes high winds and/or variable winds that make spray movement unpredictable. It also includes rain and icy conditions. Use your judgment and postpone any applications if equipment cannot be safely operated.
- Keep equipment maintained and in proper working order. Regularly inspect hoses, seals, nozzles, and any other part that could fail from damage and wear. Tanks should be regularly inspected to ensure they are still structurally sound.

All certified applicators must show that they understand the need for protective clothing and other personal protective equipment, and that they know how to use it. The PPE called for by the label must be worn. It is part of the label instructions. You should view it as a necessary part of avoiding exposure, and thus reducing risk. At the very least, applicators should wear long pants, shoes and

socks, and a long-sleeved shirt. Additional personal protective gear may also include overalls, boots, aprons, respirators, and goggles. These are specified on individual labels.

Different activities may require different levels of personal protection. For example, an applicator may not be required to wear goggles, while the mixer/loader is required to wear them. Remember, the PPE required by the label must be worn.

Exposure risk can also be reduced by actions you can take once you are done applying a pesticide, when you are cleaning up any equipment or rinsing pesticide containers.

- Wash the outside of your gloves before you take them off, and peel back PPE to avoid contact with the outside surfaces.
- Wash as soon as possible after you've cleaned up after applying a pesticide. Use a mild liquid detergent and warm water. This doesn't replace the need for a thorough shower at the end of the workday, but does reduce any potential exposure from residues until you can wash yourself more thoroughly.
- No later than at the end of your workday, wash your whole body thoroughly, including your hair, with a mild detergent and running warm water. If you cannot shower immediately, at least try to wash your hands, arms, and face, and any other skin that may have been exposed.
- Work clothes should be removed at the end of the workday.
- Wash dirty work clothing separately from other laundry. You can reduce the risk of cross-contamination even more if you run the empty machine once before using it for regular household laundry.

For Your Information

Don't wait until the end of the day if you spill a pesticide on your clothes. Change your clothes immediately, using coveralls if other clothing is not available. Discard any clothing that has been heavily contaminated (thoroughly wetted) with pesticides; throw them away. [sources: NPIC, University of Hawaii Extension]

UNIT 3. SYMPTOMS OF PESTICIDE POISONING

Old required content under 40 CFR 171.5(a)	(2) "... recognize poisoning symptoms..."
Updated required content under 40 CFR 171.105(a)	"(2)(vii) Symptoms of pesticide poisoning."

New content: Consider using or adapting this content to fill gaps in training

In the event of an accidental exposure, certified applicators should recognize the signs and symptoms of pesticide poisoning. However, the signs may be different depending on the duration and route of exposure (i.e., oral, dermal). Each chemical can cause different health effects, and they might cause different effects when someone is exposed to a mixture. Sometimes, individuals may be more sensitive to the effects because of their genetics, medications/conditions, or allergies.

Signs may include:

- skin rash or skin lesions
- breathing difficulty or irritation
- muscle incoordination
- sweating
- vomiting
- diarrhea
- muscle twitching
- seizures
- tingling sensations
- headaches
- nausea
- dizziness
- abdominal pain
- and/or mental confusion

This is not a complete list. For some insecticides, a poisoning may be easily confused with a cold, flu, or a hangover. One herbicide causes fingernails to crack after repeated skin exposure. To learn about the pesticide(s) you use, read the label and the Safety Data Sheet.

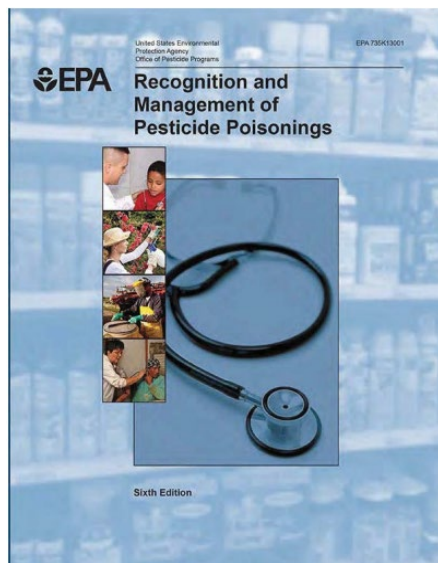
In an emergency, if you think you have been exposed, seek medical attention right away. One option is contacting a Poison Control Center at 1-800-222-1222.

If you have non-emergency questions or want general information, reach out to the National Pesticide Information Center (NPIC) at 1-800-858-7378.

There are many chemical classes and individual compounds that are used as pesticides, and new chemistries are being developed constantly. Never assume an exposure is harmless.

Important!

If an exposure occurs, take steps to end the exposure. Wash the affected area or remove the person to fresh air. Next, follow the first aid instructions on the product label immediately. If signs and symptoms are potentially serious or if you are not sure, you should reach out for trained medical assistance. Poison Control Centers: 1-800-222-1222.



<http://npic.orst.edu/rmpp.htm>

UNIT 4. FIRST AID AND OTHER PROCEDURES IN CASE OF A PESTICIDE MISHAP

Old required content under 40 CFR 171.5(a)	(2) "... procedures to follow in case of a pesticide accident..."
Updated required content under 40 CFR 171.105(a)	"(2)(viii) First aid and other procedures to be followed in case of a pesticide mishap..."

The 2017 requirements are very similar to the older requirements. If your existing content does not include adequate first aid procedures, consider adding content adapted from chapter 5 of the National Pesticide Applicator Core Manual, 2nd. Ed. (2014).

UNIT 5. DISPOSAL PROCEDURES

Old required content under 40 CFR 171.5(a)	(2) "... specific disposal procedures..."
Updated required content under 40 CFR 171.105(a)	"(2)(ix) 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."

New content: Consider using or adapting this content to fill gaps in training

Disposal procedures

A large part of preventing pesticide incidents is following proper practices for storing, transporting, handling, and disposing of pesticides. If pesticides are packaged in containers smaller than 55 gallon drums, pesticide storage is regulated through the instructions on the label. Some states (Maine, New Hampshire, North Carolina, and Washington as of December 2020) have additional pesticide storage requirements. Local ordinances also may apply. These may include fire, building, or zoning codes.

Pesticides should be stored in a dry facility that ideally is used only for this purpose. If a separate building is not possible, an area with clearly defined boundaries inside an existing building should be dedicated to storage. The site should not be prone to flooding and at least 100 feet from well heads and other sensitive areas including storage sites for food, seed, or feed. Runoff from spills or leaks should not be able to contaminate water sources. Siting considerations include prevailing winds, potential fire hazard, proximity to residential or commercial areas, and availability of emergency response services. The pesticide storage area should always be locked and inaccessible to anyone but authorized personnel. The facility should be clearly marked, including with “No Smoking” signs.

- The floor should be nonporous and easily cleaned. Soil, wood, and other absorbent flooring materials are extremely difficult to clean thoroughly in case of a spill.
- You need enough bright lighting so that you can easily read labels, notice damaged containers or spills, and so you can clean up thoroughly if there is a spill or leak.
- Products should never be placed directly on the floor. You can put large sacks or metal containers on pallets. If the pallets are wooden, they can be coated, covered in plastic, or treated with polyurethane or epoxy paint so that spilled residues will not soak into them. If pallets become wet/soaked/contaminated, replace them to reduce exposure risk.
- Store smaller containers on shelves so that labels are clearly visible. Ideally, shelving should include leak-proof trays or bins to catch spills or leaks in case a container is damaged or is knocked over.

- Place powders and granules on shelves above those with liquid products. Store insecticides, fungicides, and herbicides in separate groups.
- PPE and tools and supplies for cleanup should be available near the storage area, but other PPE should be stored away from pesticides to avoid contamination of the PPE.
- There should also be a supply of clean water, soap, an eyewash dispenser, and a first-aid kit. All of these items should be away from potential contamination by pesticide fumes, dusts, or spills but close enough to be readily accessed if needed.
- Establish notification and cleanup protocols for your storage facility. In addition, keep a fire extinguisher rated for chemical fires in the facility.
- If the facility stores any highly toxic pesticides or has a large inventory, notify the local fire department, police, public health officials, and local hospital about the facility. Inform the fire department of what pesticides are regularly stored at the site, provide them with a floor plan, and work with them to establish an emergency response plan.

Pesticides must be stored away from heat, sparks, or open flame. If possible, store volatile products by themselves away from other pesticides. Temperatures should not dip below 40 °F or rise above 100 °F. Temperature extremes may alter the pesticides' chemistry. Very high temperatures may also damage containers, increasing the chance of a spill or other accident, or cause vapor to escape.

Have a dedicated, separate area for pesticides that are awaiting disposal so that they are not accidentally used. Maintaining inventory and use records will allow you to tailor your purchases to what you will actually need. Further, in case of accident, fire, or other incident, you will know exactly what was in storage.

If you discover that a pesticide product has separated, discolored, has excessive clumping, poor suspension, or has broken into distinct layers, the product may no longer be usable. If you aren't sure, contact the dealer or manufacturer.

Keeping inventory low reduces the risk of accidents.

Pesticide disposal is regulated both under FIFRA and the Resource Conservation and Recovery Act (RCRA), and by state and local regulations. Pesticide disposal is subject to streamlined federal regulations under the Universal Waste Program. Commercial and private applicators must dispose of both pesticides and empty

containers in a separate process than that reserved for household hazardous waste collection. Many states have pesticide disposal programs set up specifically for agricultural and commercial pesticide products. These programs are often known as “Clean Sweep” programs.

Containers that still have any amount of the original product in them must be treated as hazardous waste. State and local laws may be more strict than the labels for disposal. Your state environmental agency has jurisdiction over disposal.

Empty containers are still subject to regulation. They may be single use or refillable. It is the responsibility of the manufacturer or distributor to refill the refillable containers. However, it is your responsibility to follow label instructions regarding how to handle the empty container prior to disposal or recycling, and to ensure the container ends up in the appropriate destination.

Pesticide containers should never be used for anything other than storing the product they originally contained. Wear personal protective equipment when preparing containers for disposal and follow all label instructions for rinsing or otherwise cleaning containers. If containers must be rinsed, see the section below regarding cleaning equipment and empty containers.

For Your Information

When working in agricultural production, and the Worker Protection Standard (WPS) applies, the employees who rinse/handle empty containers must be trained and protected as pesticide “handlers”. That is, unless every container has been triple-rinsed before handling. [sources: EPA, WA State University Extension, NPIC website]

Pesticide transport and mixing pose some of the greatest risks for the worker(s) and the surrounding environment. Following proper practices during transport and mixing can greatly reduce these risks.

- Pesticides must be secured in the back of a truck or other compartment that is not shared by passengers or the driver.
- If the bed of a truck is made of wood, use of an impervious bed liner or place the pesticides in an impervious container to help contain spills if an accident occurs.

- Check all caps and covers while loading containers to make sure all are closed tightly. Handle containers carefully. Dropping them, pushing them over rough surfaces, or tossing them could cause them to break or be punctured. Tie them down securely once they are in place.
- Wear chemical-resistant gloves while loading and unloading to reduce the risks of dermal exposure in case a spill or leak has occurred.
- Because accidents can happen, never transport pesticides with food, livestock or pet feed, seed, or consumer goods.
- Bring a spill kit consisting of absorbent material such as kitty litter, a shovel, and a plastic storage container when you transport pesticides. Chemical-resistant gloves, coveralls, and other personal protective equipment should be included, and a change of clothing should be stored within the vehicle away from the pesticides.

If an accident should happen or if a leak is discovered, follow the three Cs: control, contain, and clean up. Controlling the spill means stopping further spread. If a container has fallen over, turn it upright. Move any leaking containers into the plastic storage container. Contain the spill with absorbent materials such as kitty litter. Clean up by putting the contaminated material used to contain the spill into a plastic storage container that can be discarded.

UNIT 6 . ENVIRONMENTAL CONSEQUENCES OF THE USE OR MISUSE OF PESTICIDES

Old required content under 40 CFR 171.5(a)	(4) "Recognize local environmental situations that must be considered during application to avoid contamination."
Updated required content under 40 CFR 171.105(a)	(3) "Environment... The potential environmental consequences of the use and misuse of pesticides, including the influence of the following: (i) Weather and other climatic conditions. (ii) Types of terrain, soil, or other substrate.

	(iii) Presence of fish, wildlife, and other non-target organisms. (iv) Drainage patterns."
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New content: Consider using or adapting this content to fill gaps in training

Environment

Following the pesticide label is required by federal law. It may seem that little is left to judge after reading the label. However, pesticide use can lead to negative impacts on the environment even if the label is followed, and negative impacts are much more likely if the label is not followed. Site assessment is key. The weather, the terrain of the site, drainage patterns, the soil type or other substrate present, presence of surface waters and other sensitive sites must all be accounted for. Applicators also need to be aware of the presence of fish and wildlife, from non-target, sensitive insects such as bees, to endangered species.

Weather is an obvious factor to consider. High temperatures may lead to unacceptable volatilization of some pesticides. Wind can blow an application off site, and heavy rain that falls before an application has sufficient chance to dry can wash pesticide into surface waters. If rainfall is severe, resulting erosion can transport pesticides bound to soil particles. Pay attention to the area's pattern of drainage. Where will rain carry water down the landscape?

More subtle weather variables include inversions, which may facilitate the lateral movement of a pesticide spray causing it to drift off target. Label language will specify if a product is particularly prone to drift in certain weather conditions.

The physical setting of an application will influence whether and where a pesticide might run off site, and whether it may pose a risk to local groundwater or surface water resources. Soil characteristics such as pH, the amount of organic matter, and the soil type influence pesticide movement and breakdown. Hilly terrain may increase the likelihood of runoff or erosion carrying pesticides off site. Sandy soils are more permeable, allowing pesticides to trickle down to the water table. Clay is hard for pesticides to penetrate. When soil is rich in organic matter

and oxygen, pesticides are more likely to be broken down by microbes. When soil is more sterile and dry, you might expect pesticides to stay present and active for a longer period.

One of the most impactful things you can do to protect the environment has to do with your procedures for cleaning equipment and disposing of unwanted chemicals. Never use stormwater drains for disposal of pesticides, including equipment rinse-water. Sometimes stormwater is released into the environment untreated, particularly during storms. Even when treated, pesticides may not be removed from stormwater entirely.

It is the responsibility of every pesticide applicator to avoid harm to non-target organisms, including plants, fish, wildlife, and beneficial invertebrates such as pollinators. Look for signs of wildlife activity. Talk to local beekeepers as needed. Never leave puddles or piles of pesticides or treated seed where wildlife could get into them. If you see impacted wildlife, report it to your state's pesticide regulatory agency. http://npic.orst.edu/reg/state_agencies.html

UNIT 7 . PESTS

Old required content under 40 CFR 171.5(a)	(1) "Recognize common pests to be controlled and damage caused by them"
Updated required content under 40 CFR 171.105(a)	(4) "Pests. The proper identification and effective control of pests, including all of the following: (i) The importance of correctly identifying target pests and selecting the proper pesticide product(s). (ii) Verifying that the labeling does not prohibit the use of the product to control the target pest(s)."

New content: Consider using or adapting this content to fill gaps in training

Pests

Proper identification of the pest is a critical part of successful pest management, and for minimizing pesticide-related risks. Pest identification means knowing how to identify the pest and differentiating it from similar species, knowing its basic life

history (i.e., egg, larva, pupa, adult), and recognizing signs of its presence. It is necessary to correctly identify the pest in order to choose the appropriate pesticide product, timing, and manner of application. If the pesticide application does not control the pest, there is no benefit to compensate for the risk. If you are a private applicator, there may be no greater consequence of failing to control the pest than the cost of the application, the continuing problem, and the risk of making the application without any compensating benefit. If you are a commercial applicator, the failure also entails damage to your reputation and the reputation of your company.

Pesticide labels are written to specify where the products can be used. Specific pests do not have to be listed on the label, because the risks are associated with where and how the product is to be applied rather than what it is being applied for. There are some exceptions for public health pests, including diseases (i.e. viruses) and rodent species. Those must be listed on the label. Additionally, labels may prohibit the use of a product against certain pests if necessary, and one can always check with the product manufacturer about any pests not specified on the label in order to learn whether the product should be effective against them.

UNIT 8. PESTICIDE CHARACTERISTICS

Old required content under 40 CFR 171.5(a)	(3) "... the ability to prepare the proper concentration of pesticide to be used under particular circumstances taking into account such factors as the area to be covered, speed at which application equipment will be driven and quantity dispersed in a given period..."
Updated required content under 40 CFR 171.105(a)	(5) "Pesticides. Characteristics of pesticides, including all of the following: (i) Types of pesticides. (ii) Types of formulations.

	(iii) Compatibility, synergism, persistence, and animal and plant toxicity of the formulations. (iv) Hazards and residues associated with use. (v) Factors that influence effectiveness or lead to problems such as pesticide resistance. (vi) Dilution procedures."
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New content: Consider using or adapting this content to fill gaps in training

Pesticide Characteristics

A "pesticide" is any substance or mixture that is used to control, mitigate, or kill a pest. A "pest" may be an insect, plant, microbe, or another animal; it's really any undesirable organism.

- Avicides kill birds
- Rodenticides kill rodents
- Piscicides kill fish
- Molluscicides kill or control mollusks, including slugs and snails
- Insecticides kill or control insects and often, Arachnids such as spiders
- Miticides kill or control mites, which may harm plants or animals
- Nematicides control tiny roundworms called nematodes
- Fungicides control or prevent fungal infections
- Bactericides control or prevent bacterial infections
- Herbicides kill or control weeds, also known as undesirable plants
- Repellents keep pests away from a treated space or object
- Attractants lure pests to a location, often a trap
- Growth regulators interfere with a pest's development, growth, or reproduction
- Defoliants remove foliage from plants
- Desiccants dry/destroy plant tissues, or they damage the exoskeleton of insects, allowing them to dry up

Pesticide products include a variety of ingredients that combined, make a “formulation.”

One or more active ingredients, the pest-controlling chemical(s)

+

One or more other ingredients, such as carriers, solvents, spreaders, stickers, stabilizers, etc.

=

Pesticide formulation

Two products with the same active ingredient may be sold in very different formulations. For example, one might be watery and the other oily. Some formulations can cause plant- or property-damage if used improperly, so it's important to follow each individual product's label directions, even for similar products.

When sold as a concentrate, a pesticide product must be diluted with water or a solvent. Some pesticides are sold pre-mixed, or ready-to-use. In general, pesticides are formulated as liquids, dry materials, or gasses (fumigants). Special certification is now required for private pesticide applicators before purchasing or using fumigants. This section will briefly cover liquid and dry pesticide formulations. No matter the formulation, the pesticide label includes directions for using the product effectively.

Liquid pesticide formulations; abbreviations found on pesticide labels in parentheses

- (EC) Emulsifiable Concentrate
- (ULV) Ultra Low Volume Concentrate
- (M) Microencapsulated
- (RTU) Ready-to-Use
- (FL) Flowable
- (A) Aerosols

Dry pesticide formulations

- (B) Bait(s)
- (D) Dust
- (DF) Dry Flowable
- (G) Granules
- (P) Pellets
- (SP) Soluble powder
- (WP) Wettable powder
- (WDG) Water-dispersible granules
- (WSP) Water-soluble packaging


Chemical reactions may take place when pesticide products are mixed. They might combine to create something more toxic, more effective, or more persistent. They might also change the way we can be exposed. For example,

- Emulsifiable concentrates can make it easier for pesticides to pass through the skin.
- Handling dust may present the risk of inhalation.
- Microencapsulations delay the deployment of the active ingredient(s), which can prolong the period of effectiveness.
- Aerosols propel liquid particles to fill a space or hit a target.
- Dusts, granules, and pellets must be handled and applied without moisture.

Compatible pesticides may be mixed together in a tank before application. Incompatible pesticides may form a gel or curdle into clumps. First read each product's label to identify known incompatibilities. The label may also identify incompatible containers for mixing, storage, or application. Agitation, or regular stirring/shaking may be required to prevent chemical incompatibility problems. Undiluted concentrates should not be mixed.

Cleaning your equipment is essential to keeping incompatible chemicals apart. For example, the residue in the equipment from yesterday's application may not be compatible with today's product. When they mix, they could form clogs or caustic materials, damaging the equipment. Follow the manufacturer's instructions for cleaning and maintaining equipment used for storing, transporting, and applying pesticides.

A wide variety of adjuvants (add-ins) are available for the spray tank, including compatibility agents. Drift-reduction agents reduce the number of fine, drift-



prone droplets. Buffers allow users to mix pesticides with variable pH. There are spreaders, stickers, anti-foaming agents, and more.

Pesticide activity may be drastically affected by factors in the environment and the pest's biology or behavior. When a pesticide seems to fail, revisit the label and the site of application.

So your pesticide isn't working?

- Pesticides may go through chemical changes in storage, especially in extreme temperatures. Some products don't keep well after being diluted.
- Soils rich in organic matter may limit the duration of pesticide activity because microbes break down pesticides.
- High temperatures can cause some pesticides to evaporate quickly.
- Herbicides tend to work best when plants are growing vigorously. Cold temperatures and low humidity may slow things down.
- The pests may have developed pesticide resistance.

Pesticide resistance develops when a population of pests becomes tolerant or resistant to its activity. Within the population, the few resistant individuals were allowed to reproduce after other individuals succumbed to pesticide exposure. Over a period of generations, the whole population of pests may display those resistant characteristics.

To prevent the development of pesticide resistance, don't use the same tactics (alone) for a period of multiple pest-generations. In this way, surviving pest populations will continue to be genetically diverse. Pesticide resistance is predictable when the same pesticide is used in the same area, on the same population of pests, over and over again.

Dilution procedures are included on the pesticide label. More guidance is helpful when planning to mix two or more pesticide products. First, check all of the product labels for incompatibility notes. If none of your planned combinations are prohibited, proceed to a jar test. Prepare a miniature tank mix in the jar, shaking or stirring after each ingredient is added. Let the mixture stand for 10-15 minutes to determine compatibility. Signs of failure include clumps, flakes, sludge, precipitates, layering, and heat-generation. There are compatibility kits and adjuvants available for certain combinations.

Tank-mixing order:

1. Fill the tank one-fifth to one-half full with carrier (for example, water). Start agitating.
2. Add a compatibility agent, if needed.
3. Mix dry formulations with a small amount of carrier (for example, water), if needed, in a pre-slurry.
4. Add dry suspension products: wettable powders, dry flowables, water-dispersible granules, as a pre-slurry if necessary.
5. Add wet suspension products: flowables, liquids, and microencapsulated.
6. Add solution products: solutions, soluble powders
7. Add surfactants or other adjuvants, if needed.
8. Last, add emulsifiable concentrates

Constant agitation can ensure a uniform spray mixture at all times.

UNIT 9. EQUIPMENT

Old required content under 40 CFR 171.5(a)	None
Updated required content under 40 CFR 171.105(a)	(6) "Equipment. Application equipment, including all of the following: (i) Types of equipment and advantages and limitations of each type. (ii) Uses, maintenance, and calibration procedures."

If your existing content is not detailed enough to meet new requirements, consider adapting content from Chapter 11 of the National Pesticide Applicator Certification Core Manual, 2nd. Ed. (2014).

UNIT 10. APPLICATION METHODS

Old required content under 40 CFR 171.5(a)	(2) "... timing and methods of application..."
Updated required content under 40 CFR 171.105(a)	(7) "Application methods. Selecting appropriate application methods, including all of the following: (i) Methods used to apply various forms and formulations of pesticides. (ii) Knowledge of which application method to use in a given situation and that use of a fumigant, aerial application, or predator control device containing sodium cyanide or sodium fluoroacetate requires additional certification. (iii) How selection of application method and use of a pesticide may result in proper use, unnecessary or ineffective use, and misuse. (iv) Prevention of drift and pesticide loss into the environment."

New content: Consider using or adapting this content to fill gaps in training

Application Methods

Application methods depend on the type of and properties of the pesticide being used, the application equipment, the site to which the pesticide will be applied, and the targeted pest. Some common application methods are given below.

- Aerial applications use aircraft to apply the pesticide.
- Broadcast applications are used for granular formulations, baits, and liquids. A broadcast application distributes the pesticide uniformly to the entire area.
- Chemigation is the injection of a pesticide or fertilizer into irrigation water. It is then applied through the irrigation system.
- Crack and crevice treatments are when small amounts of pesticide are applied into the openings of expansion joints or between other construction

elements, or between equipment and floors. Cracks and crevices may be in the interior of a structure, such as between baseboards or window trim and walls.

- Direct Spraying is an application where the pesticide is applied to the target pest or its nest. This minimizes risks to non-target plants and animals.
- Exterior Perimeter applications are those around the boundary or border of an area. For example, exterior perimeter treatments are often applied around structures.
- Foams are a pesticide plus a foaming agent designed for use in areas such as voids.
- Fumigations involve application of a fumigant to an enclosed space or structure for a specified length of time at a specified concentration.
- General spraying is the application of a pesticide to fields, lawns, walls, floors, or other broad surfaces.
- Misting is an application in which the pesticide is in the form of a finely divided liquid suspended in a gas. This is typically used to control flying insects such as mosquitoes.
- Painting is the application of a liquid pesticide to a surface by swabbing or brushing.
- Placement is the term used for putting down baits, including gel baits, fly baits, and self-contained bait stations such as those commonly used for rodenticides.
- Predator control devices use a mechanical device to deliver the pesticide into the mouth of the predator. Some predator control devices do not deliver a pesticide but act as repellents, such as motion-activated noisemakers or strobe lights.
- Soil applications are those in which a pesticide is applied directly to the soil. For termites and tree pests, pesticides may be applied to the soil as a “drench.”
- Space applications are when the pesticide is dispersed into the air in an enclosed area to control either exposed crawling or flying pests. The equipment used includes foggers, misters, vapor dispensers, or aerosol devices.
- Spot treatments are where pesticides are applied to small, distinct areas in which pests are found or are likely to occur. A “spot” is defined by the Georgia Pest Control Commission as less than 2 square feet in area.
- Sprinkle or scatter refers to distributing pesticide droplets or granules, and is commonly used for granular products.

- Void applications involve applying pesticides into wall and equipment voids. Commonly used equipment for this method include injection tips.

The methods to apply any particular product to a specific site are typically listed on the label. However, unless specified otherwise, a pesticide may be applied using any application method that is not prohibited on the label. There may be state requirements that you will need to follow. For example, Washington state specifically prohibits applying a pesticide by chemigation unless chemigation instructions are included on the label.

Some application methods require special training and certification. These include predator control devices that involve sodium cyanide or sodium fluoroacetate, aerial applications, and fumigations. Private pesticide applicators may not use these methods (aerial, fumigation, or predator control devices) without additional certification. It is often called a category or endorsement on your overall certification as a pesticide applicator.

Selection of an appropriate pesticide and application method is critical to the success of pest control and the prevention of offsite pesticide movement or exposure of non-target organisms. Choosing an inappropriate pesticide or applying a pesticide using an inappropriate application method may mean a greater risk of unintended exposures, environmental contamination, or failure to effectively control the pest. It may be considered misuse if the proper certification is not held by the applicator or the label prohibits the application method used.

Prevention of drift and pesticide loss into the environment is your responsibility. In agricultural pesticide applications, labels state, "Do not apply this product in a way that will contact workers or other persons, either directly or through drift." This means that any contact with unprotected persons is unlawful, wherever they are in relation to the application. In any setting, agricultural or not, pesticide drift may be considered faulty or negligent. Pesticide drift may also result in legal liability, regulatory fines, loss of licensure, and litigation.

During or after a pesticide application, drifting particles may move off-target, potentially damaging plants, livestock, sensitive areas, fish, and other wildlife. Even days after the pesticide application, rising temperatures can cause some pesticides to volatilize and move off-target as a gas. Label directions are very

specific for such products, requiring you to take weather, adjacent areas, and other factors into account.

Sensitive sites include things like organic fields, beehives, schools, medical facilities, sensitive crops, and water bodies. Evaluate each application site to identify and prevent potential impacts. Write down your plans to avoid pesticide drift, which may include mitigation steps such as:

- Use a drift-reduction adjuvant in the tank mix
- Select nozzles that reduce production of fine (tiny) spray particles
- Move the application equipment closer to the target(s), for example, by minimizing boom height
- Leave unsprayed strips or buffers adjacent to sensitive sites
- Employ vegetative buffer strips to filter runoff and/or minimize the risk of particle drift
- Avoid spraying when winds are too calm (0-3 mph) or too high (more than about 10 mph), and avoid spraying when the wind is blowing toward sensitive areas
- Explore drift-reduction technologies like spray shields and electrostatic sprayers

Large droplets are the least likely to drift. That's because they evaporate more slowly, fall to the ground more quickly, and the wind has less influence on large droplets. While a large droplet may fall to the ground in seconds, a tiny droplet may take minutes or hours to float to the ground. That's a lot of time for off-target movement to occur. Take the steps that make sense in your application settings to keep spray droplets larger, while achieving the necessary coverage to make the application effective.

UNIT 11: LAWS AND REGULATIONS

Old required content under 40 CFR 171.5(a)	None
Updated required content under 40 CFR 171.105(a)	(8) "Laws and regulations. Knowledge of all applicable State, Tribal, and Federal laws and regulations, including understanding the Worker Protection Standard in 40 CFR part 170 and the circumstances where compliance is required."

New content: Consider using or adapting this content to fill gaps in training

Laws and regulations

After a pesticide is registered by the US Environmental Protection Agency (EPA), the pesticide must be further registered in each state before sales/distribution in that state is allowed. Many states and tribes have additional requirements, above and beyond the federal requirements. For example, a product with clove oil might be exempt from the requirement for pesticide registration at the federal level, but more than half of states require registration for "minimum risk pesticides." Another example includes label language that pertains to a particular state. You may have seen a label that says, "Not for use in the state of New York" or "Not for use in residences in the state of Florida." It is your responsibility as a licensed pesticide applicator to be compliant with applicable rules.

The Agricultural Worker Protection Standard (WPS) provides occupational protections to pesticide handlers and agricultural workers in agricultural establishments. It was originally developed in 1992, then revised and updated in 2015. The goal of the WPS is to reduce pesticide exposure incidents among farmworkers and their family members. Protections for workers are greater than protections for others (i.e. bystanders) because farm- and forestry-workers may be exposed to pesticides daily for long periods. For example, the restricted-entry interval (REI) only applies to workers.

The WPS applies on agricultural establishments including farms, forests, nursery operations, and similar sites. Under the rule, pesticide handlers and agricultural workers must be trained in pesticide safety, protected from exposure, and provided specific information about the site and products used.

- Pesticide “handlers” are people who mix, load, or apply agricultural pesticides, assist with the application of pesticides, or who clean or repair pesticide containers and/or application equipment.
- Agricultural “workers” are those who are employed or self-employed performing activities that are directly related to plant production, working in areas that were treated with pesticides in the last 30 days, or where an REI was in effect during the last 30 days. Agricultural workers may come in contact with treated surfaces when carrying nursery stock, repotting plants, watering, pruning, and performing other tasks “directly related to the production of agricultural plants on an agricultural establishment.”

Agricultural establishments are those that grow and harvest any of the following for commercial production:

- Fruits and vegetables on farms
- Timber and trees in forests and nurseries
- Plants in greenhouses and nurseries
- Employers of researchers who help grow and harvest plants
- Employers at commercial pesticide handling establishments

WPS requires employers to provide all agricultural workers and pesticide applicators with the following:

- Training on pesticide safety for applicators and training for all workers whose duties may have them working in areas where pesticides have been applied, or where entry has been restricted as a result of a pesticide application within the last 30 days
- Any PPE listed on the pesticide product label
- Hand washing and eye rinsing stations as well as any other on-site decontamination equipment at the site where the pesticide application is taking place
- Verbal or written notices about pesticide applications, safety data sheets, and area restrictions

As a certified applicator, there are several provisions with which you need to comply. First, WPS regulations define the application exclusion zone (AEZ) as “the

area surrounding the application equipment that must be free of all persons other than appropriately trained and equipped handlers during pesticide applications.” If you are applying a product aerially, by an air-blast sprayer or other air-propelled method, or as a fumigant, fog, mist, or smoke, you will need to observe a 100-foot AEZ. If you are spraying a pesticide at a height of greater than 12” from the soil surface or planting medium, and droplets are medium-sized or greater, you will need to observe a 25-foot AEZ. <https://www.epa.gov/pesticide-worker-safety/agricultural-worker-protection-standard-wps>

Important!

Violations of the WPS are considered violations of the pesticide label.

The WPS is complex. Resources include a “How to Comply” manual published by the US EPA (<https://www.epa.gov/pesticide-worker-safety/pesticide-worker-protection-standard-how-comply-manual>), a handbook for employers (<http://pesticideresources.org/wps/guide/agemp.html>), and a wide range of frequently-asked questions about the WPS are provided by the Pesticide Educational Resources Collaborative (PERC, <http://pesticideresources.org/>)

All pesticide applicators are required to have knowledge of all applicable federal, state, and tribal laws and regulations that pertain to the application site. The WPS is only one such federal regulation.

UNIT 12. SUPERVISING NONCERTIFIED APPLICATORS

Old required content under 40 CFR 171.5(a)	None
Updated required content under 40 CFR 171.105(a)	(9) “Responsibilities for supervisors of noncertified applicators. Certified applicator responsibilities related to supervision of noncertified applicators, including all of the following: (i) Understanding and complying with requirements in § 171.201 of this part for private applicators who

	<p>supervise noncertified applicators using restricted use pesticides.</p> <p>(ii) Providing use-specific instructions to noncertified applicators using restricted use pesticides under the direct supervision of a certified applicator.</p> <p>(iii) Explaining appropriate State, Tribal, and Federal laws and regulations to noncertified applicators working under the direct supervision of a certified applicator."</p>
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New content: Consider using or adapting this content to fill gaps in training

Responsibilities for supervisors of non-certified applicators

Some states/tribes/territories allow certified pesticide applicators to supervise the application of restricted-use pesticides by non-certified applicators.

As the supervising certified applicator, you must:

- Be licensed to perform the type of application being performed, including any required categories or endorsements. For example, if you are supervising the use of a restricted-use product to control a pest on turf, you must be certified in 'ornamental and turf' pest control or a similar certification category.
- Be physically present at the site where the restricted use pesticide is applied when required by product labeling.
- Ensure that the non-certified applicator is at least 18 years old.
- Ensure that the non-certified applicator has clean Personal Protective Equipment (PPE) as specified on the label and it is in proper operating condition.
- Ensure that the non-certified applicator uses required PPE properly for its intended purpose.
- Ensure that the non-certified applicator has access to the product's labeling at all times during the application.
- Ensure that all equipment is in proper working condition prior to each day of use.

- Ensure that the equipment can be used without risk of reasonably foreseeable harm to either the non-certified applicator, other people, or the environment.
- Ensure that immediate communication is possible between the supervising certified applicator and the non-certified applicator(s). Properly charged cell phones could meet this criterion if signal strength is sufficient and phones are continuously available.
- Ensure that the non-certified applicator has been instructed in the last 12 months of the safe and proper use of any equipment needed for the application. Training on application equipment must take place before the noncertified applicator makes any application of a restricted-use pesticide.
- Ensure that the non-certified applicator received sufficient pesticide safety training, as described in the following section.

Pesticide safety training for non-certified applicators under your supervision

The non-certified applicator must have pesticide safety training at least every 12 months. Alternatively, they may also be a certified applicator who a) isn't certified to perform that particular application or b) isn't certified within the jurisdiction where the application will take place.

The pesticide safety training requirement is met by either:

- taking a non-certified applicator training course such as Pesticide Safety Training for Noncertified Applicators Using Restricted Use Pesticides at Nonagricultural Sites, which is available online at <http://pesticideresources.org/ct/rup.html>
- taking an agricultural handler training course [as specified by 40 CFR 170.501], such as those listed here: <http://pesticideresources.org/wps/jfy/toh/index.html>, or
- taking another course approved by a certifying authority [40 CFR 171.201(c)(1)].

The trainer must be qualified and the content must be complete according to the federal regulations. Training can be conducted by someone who is currently certified as an applicator of restricted-use pesticides. It can also be done by someone who is a trainer of certified applicators or pesticide handlers. The trainer may also have completed an EPA-approved train-the-trainer course in pesticide safety for trainers of handlers. Additionally, a certifying authority such as a state, tribe, or territory, may designate a person as a qualified trainer.

The information that must be included in the training is specified by law, and must include all of the information the non-certified applicator will need to keep themselves, anyone else, and the environment from harm.

The non-certified applicator training materials must include, at a minimum, the following: (40 CFR 171.201d(3))

- i. Potential hazards from toxicity and exposure that pesticides present to non-certified applicators and their families, including acute and chronic effects, delayed effects, and sensitization.
- ii. Routes through which pesticides can enter the body.
- iii. Signs and symptoms of common types of pesticide poisoning.
- iv. Emergency first aid for pesticide injuries or poisonings.
- v. Routine and emergency decontamination procedures, including emergency eye flushing techniques. Non-certified applicators must be instructed that if pesticides are spilled or sprayed on the body, to immediately wash or to rinse off in the nearest clean water. Non-certified applicators must also be instructed to wash or shower with soap and water, shampoo hair, and change into clean clothes as soon as possible.
- vi. How and when to obtain emergency medical care.
- vii. After working with pesticides, wash hands before eating, drinking, using chewing gum or tobacco, or using the toilet.
- viii. Wash or shower with soap and water, shampoo hair and change into clean clothes as soon as possible after working with pesticides.
- ix. Potential hazards from pesticide residues on clothing.
- x. Wash work clothes before wearing them again and wash them separately from other clothes.
- xi. Do not take pesticides or pesticide containers used at work to your home.
- xii. Potential hazards to children and pregnant individuals from pesticide exposure.
- xiii. After working with pesticides, remove work boots or shoes before entering your home, and remove work clothes and wash or shower before physical contact with children or family members.
- xiv. How to report suspected pesticide use violations to the appropriate State or Tribal agency responsible for pesticide enforcement.
- xv. Format and meaning of information contained on pesticide labels and in labeling applicable to the safe use of the pesticide, including the location and meaning of the restricted use product statement, how to identify when the labeling requires the certified applicator to be physically present

during the use of the pesticide, and information on personal protective equipment.

- xvi. Need for, and appropriate use and removal of, personal protective equipment.
- xvii. How to recognize, prevent, and provide first aid treatment for heat-related illness.
- xviii. Safety requirements for handling, transporting, storing, and disposing of pesticides, including general procedures for spill cleanup.
- xix. Environmental concerns such as drift, runoff, and wildlife hazards.
- xx. Restricted use pesticides may be used only by a certified applicator or by a non-certified applicator working under the direct supervision of a certified applicator.
- xxi. The certified applicator's responsibility to provide to each non-certified applicator instructions specific to the site and pesticide used. These instructions must include labeling directions, precautions, and requirements applicable to the specific use and site, and how the characteristics of the use site (e.g., surface and groundwater, endangered species, local population, and risks) and the conditions of application (e.g., equipment, method of application, formulation, and risks) might increase or decrease the risk of adverse effects. The certified applicator must provide these instructions in a manner the non-certified applicator can understand.
- xxii. The certified applicator's responsibility to ensure that each non-certified applicator has access to the applicable product labeling at all times during its use.
- xxiii. The certified applicator's responsibility to ensure that where the labeling of a pesticide product requires that personal protective equipment be worn for mixing, loading, application, or any other use activities, each non-certified applicator has clean, labeling-required personal protective equipment in proper operating condition and that the personal protective equipment is worn and use correctly for its intended purpose.
- xxiv. The certified applicator's responsibility to ensure that before each day of use equipment used for mixing, loading, transferring, or applying pesticides is in proper operating condition as intended by the manufacturer, and can be used without risk of reasonably foreseeable adverse effects to the non-certified applicator, other persons, or the environment.

- xxv. The certified applicator's responsibility to ensure that a means to immediately communicate with the certified applicator is available to each non-certified applicator using restricted use pesticides under his or her direct supervision.

In addition to the training concepts above, you are also responsible for providing **use-specific** instructions to the non-certified applicator for the restricted-use pesticide, and explaining any federal, state, or tribal regulations relevant for the application. For example, provide precautions and requirements applicable to the specific use and site, the conditions of the application, and actions that could increase or decrease the risk of adverse effects.

Recordkeeping

In addition to the other requirements listed above, you will need to ensure that all required records are kept if you are supervising a noncertified applicator using a restricted-use pesticide. This includes detailed documentation of the safety training provided to the noncertified applicator. It is your responsibility to create or verify the existence of the training record before allowing the noncertified applicator to use a restricted-use pesticide under your supervision.

Training records must include: (40 CFR 171.103(e)(1)(i))

- The noncertified applicator's printed name and signature
- The date the training requirement was completed
- The name of the trainer
- The title or description of the training provided

If you used a piece of training material for agricultural handlers under the Worker Protection Standard (WPS), the record must contain all of the information required under that rule, including the trainer's qualification to train, and the EPA approval number for the training material(s).

If you used another piece of training material approved by a local authority, the record must be complete according to the authority's published rules. If the noncertified applicator is actually certified in another category/type of pesticide application, annual training is not required. However, the supervising certified applicator must keep a record including the noncertified applicator's name, certification number, expiration date, and the name of the certifying authority that issued the certification.

UNIT 13. STEWARDSHIP

Old required content under 40 CFR 171.5(a)	None
Updated required content under 40 CFR 171.105(a)	(10) "Stewardship. Understanding the importance of all of the following: (i) Maintaining chemical security for restricted use pesticides. (ii) How to communicate information about pesticide exposures and risks with agricultural workers and handlers and other persons." If your existing content is not detailed enough to meet new requirements, consider using this draft content. Numbers (1,2) and letters (viii, ix) align with requirements listed in 40 CFR Part 171.105(a).

New content: Consider using or adapting this content to fill gaps in training

Stewardship

Stewardship means taking care of something, taking responsibility for it. For example, to be a good steward of the land, a person takes good care of the land. To be a good steward of pesticides, we minimize the risks while maximizing the benefits. Appropriate pesticide stewardship includes following all label and labeling instructions and precautions, taking appropriate steps to avoid mishaps that could harm people or the environment, and taking responsibility for pesticide products from the point of purchase until final disposal.

Private applicators are required to understand the importance of pesticide stewardship. This includes maintaining chemical security for restricted-use pesticides. General storage requirements for pesticides in containers of 55 gallons or smaller are specified by the product labeling.

- Pesticide storage facilities should be locked at all times unless under the direct supervision of someone who is authorized to enter.
- The storage area should only be accessible only to authorized employees. Installation of security lighting and an alarm system may be considered.

Private applicators also must demonstrate that they understand the importance of how to communicate information about pesticide exposures and risks to relevant audiences, including agricultural workers and pesticide handlers. Open and honest communication builds trust, and it builds the knowledge base of the workforce. When talking about safety, try to avoid absolute terms. As you know, chemicals are not simply 'toxic' or 'non-toxic.' The amount of exposure also determines the risk(s). Ask questions to clarify their viewpoint and concerns as needed. If appropriate, call attention to shared experiences and other commonalities. Tell your team what you've already done to keep the risks as low as possible and encourage them to do their part by following proper safety practices.

Pesticide safety training must be presented in a manner that the non-certified applicators can understand it, recognizing that cultural and language differences may pose substantial barriers to communication. If you are a certified private applicator supervising a noncertified applicator using a restricted-use pesticide, you also are responsible for the outcome. Taking communication requirements seriously reduces the risk of accidents that could cause environmental damage or serious injury.

Communicating information about pesticide risks and exposures is not limited to audiences of agricultural workers and handlers, but includes customers and the general public, who might be far less knowledgeable about pesticides, the risks they pose, and what actions can be taken to reduce those risks. Resources such as the National Pesticide Information Center are particularly helpful for learning how to communicate risk and risk reduction to the general public. Accurately communicating technical information in a manner that is accessible and respectful is a critical professional skill.

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