Version 1.2

OREGON CORE MANUAL ADDENDUM

Oregon
Department
of Agriculture

PESTICIDES PROGRAM, OREGON DEPARTMENT OF AGRICULTURE

Acknowledgments

While the Oregon Addendum to the National Core Manual was written by the Oregon Department of Agriculture (ODA), ODA would like to thank the Cornell University Pesticide Management Education Program for allowing us to use portions of the following:

Chapter XII, "Pests," from Northeast Core Manual, Second Edition (2008).

Chapter 2, "Pests," from Northeast Core Manual, Third Edition (2012).

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Introduction

In addition to the federal laws discussed in *National Pesticide Applicator Certification Core Manual*, pesticide applicators and consultants must be familiar with and comply with state-specific pesticide-related laws. State pesticide laws may be **more restrictive**, but not be less restrictive than federal laws.

The Oregon Core Manual Addendum is to be used with the *National Pesticide Applicator Certification Core Manual*, Second Edition 2014.

How to Use This Addendum

The purpose of the Oregon Core Manual Addendum is to address the major areas of the Oregon pesticide laws and regulations, as well as the activities of agencies that are involved in pesticide regulation in Oregon. A number of topics are covered, including: Oregon specific pesticide laws, pesticide disposal, container disposal, and worker safety.

Depending on the exam, all or some of the material on the Oregon Laws & Safety exam, Private Pesticide Applicator exam, and the Pesticide Consultants exam is based on the National Pesticide Applicator Certification Core Manual and this addendum.

The learning objectives for each chapter of the addendum can be found at the beginning of each chapter. Questions on the exams tend to be related to the learning objectives. To help prepare for exams: (1) review the learning objective, (2) read each chapter, and (3) answer the review questions located at the end of each chapter.

The answers to the review questions in this addendum are found in the Appendix.

The manual, the addendum, and the exam outlines help prepare you to become a licensed pesticide applicator, apprentice, or consultant in Oregon.

1 Oregon Agencies, Laws, and Programs Involved in Pesticide Regulation and Stewardship

Learning Objectives: Chapter 1

After studying this chapter, you should:

- **Be able to explain the roles and responsibilities of the different state agencies that regulate pesticides in Oregon.**
- **Know the Oregon specific pesticide laws listed in this addendum.**

Several different state agencies and programs are involved in regulating pesticides in Oregon. The agencies and programs are listed below with a short description of their pesticide-related responsibilities. Telephone numbers and websites for each agency and program are listed in the Appendix. You may contact them directly for more detailed information.

Oregon Department of Agriculture (ODA) Pesticides Program

The Oregon Department of Agriculture is the primary state agency responsible for pesticide regulation. Three core activities of the ODA Pesticides Program are to:

- Register pesticides, and ensure the safe use through education and assistance
- Certify and license Pesticide Applicators, Pesticide Consultants, Pesticide Apprentices, Pesticide Operators, and Pesticide Dealers
- Carry out enforcement activities regarding licensing, pesticide sales and distribution, and pesticide use.
- Pollinator protection

ODA also is involved with implementing certain parts of the Worker Protection Standard.

The Pesticides Program works cooperatively with the United States Environmental Protection Agency (USEPA) in regulating the production, distribution, registration, and use of pesticides in the state.

Oregon Revised Statute Chapter 634 (ORS 634), the Oregon Pesticide Control Law, was created by legislation granting authority for pesticide regulation in Oregon to ODA. To implement this statute, ODA develops specific rules, which are contained in the Oregon Administrative Rule Chapter 603, Division 57 (OAR 603-57), Pesticide Control. These laws (statutes and rules) form the foundation for ODA's activities in pesticide regulation and control since 1953.

- The Oregon Pesticide Control Law (ORS Chapter 634),
- The Oregon Pesticide Regulations (OAR Chapter 603-57).

REGISTRATION OF PESTICIDES IN OREGON

Each pesticide product distributed, sold, or offered for sale in Oregon must be registered with ODA annually.

ODA has four types of pesticide registrations, which are classified according to specific sections of the federal law, the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA):

- Section 3, often referred to as the federal label or container label,
- Section 24(c), also called a Special Local Needs label or SLN,
- Section 18, also called an Emergency Exemption, and
- 25b (Minimum Risk) pesticides that are exempt from federal registration, but not state.

Section 3 registrations and the associated labels are reviewed and accepted by EPA. The label will bear the EPA registration number and must be attached to each pesticide container. More information about Section 3 registrations and labels are covered in the National Core Manual.

Under FIFRA Section 24(c), under certain conditions, states are authorized to grant Special Local Need (SLN) Registrations. ODA may grant a SLN registration for the use of a pesticide on a crop, when a pest is causing serious damage and there are no currently registered pesticides that will adequately control the pest. The SLN or 24(c) label may have additional sites, increased rates of application, a change in the frequency of applications, or how the pesticide can be applied. If the site is a food or feed crop, the pesticide must have an existing tolerance set by the EPA on that particular food or feed crop.

The registrant or industry group may request an SLN, and provide supporting data to ODA. The data must show that the product will control the pest and not cause harm to the treated crop, wildlife, or the environment. Issues regarding potential applicator or worker pesticide exposure must also be addressed before the SLN is granted.

Applicators using a pesticide under an SLN label must follow all directions on the SLN label, and the main pesticide container label (FIFRA Section 3).

Since the SLN label allows a person to use the product in a manner different from the Section 3 label, the applicator must have a copy of the SLN label in their possession at the time of application.

FIFRA Section 18 Emergency Exemptions may be issued by EPA when there is a new pest emergency that will cause significant economic loss in situations where there is no currently registered pesticide or method to control it. It is the only time when EPA will allow an active ingredient they have not registered to be used. ODA must submit petitions to EPA that provide data showing a compelling and significant difference between control provided by the standard pesticide used and the proposed pesticide.

Section 18 exemptions may be granted when there is no established general pesticide residue

tolerance; however, EPA will establish a time-limited tolerance.

Section 18 exemptions are for a specific number of acres that may be treated and may be valid for up to 1 year, and they must be used according to the label directions. The Section 18 label must be in the possession of the user at the time of application.

FIFRA Section 25b Minimum Risk Pesticides contain specific active and inert ingredients that EPA considers low risk. These products are exempt from federal registration, but products sold or distributed in Oregon must be registered annually with ODA.

Pesticide Stewardship Partnership Program (PSP)

The PSP is a program coordinated through ODA, and designed to reduce the potential environmental impact of pesticides on Oregon's water bodies, and the organisms that depend on these habitats. The PSP program uses local expertise, combined with pesticide monitoring data to encourage voluntary changes in pesticide use and practices, which result in measurable improvements in water quality for aquatic life and humans.

The PSP program is administered through the inter-agency Water Quality Pesticide Management Team (WQPMT), comprised of members from:

- Oregon Department of Agriculture (ODA),
- Oregon Department of Environmental Quality (DEQ),
- Oregon Department of Forestry (ODF),
- Oregon Health Authority (OHA),
- Oregon Watershed Enhancement Board (OWEB), and
- Oregon State University (OSU).

STEWARDSHIP PARTNERSHIPS IN ACTION

There are currently nine (9) designated PSP projects in Oregon:

- Amazon Creek
- Clackamas
- Hood River
- Middle Deschutes
- Middle Rogue
- Molalla-Pudding
- Wasco
- Walla-Walla/Milton-Freewater
- Yamhill

The WQPMT developed the *Pesticide Management Plan for Water Quality Protection* in May 2011. This plan, approved by the U.S. Environmental Protection Agency, is designed to protect water quality from pesticide impacts. The Plan provides for the designation of priority pesticides that could affect water quality, and provides for the evaluation of current and historic water quality monitoring data and the cooperative development of management measures to address pesticides of concern both at the watershed and statewide level. In 2013, the Legislature allocated stable funding for the Pesticide Stewardship Partnership.

Additional information regarding the PSP program and the WQPMT can be found on the ODA website.

PESTICIDE COLLECTION EVENTS

ODA and DEQ work with PSP partners to conduct waste pesticide collection events in various locations throughout the state. The purpose of these events is to reduce the risk of accidental release of unwanted or unusable pesticides into surface or groundwater. The program provides a no-cost, legal disposal option for pesticide users to dispose of pesticides where the container is damaged and/or the label is unreadable, the pesticide is no longer registered for use, or is unwanted due to changes in farming practices. Disposal of unusable or unwanted pesticides and their containers through this program ensures compliance with state and federal hazardous waste regulations. These collection events are usually for farmers and private landowners. There may be a nominal fee for businesses, ag retailers, and for larger quantities.

Empty, triple rinsed plastic containers are also typically collected for recycling at these events.

Collection events can be found at: https://oda.direct/PesticideStewardship.

Pesticide Analytical and Response Center (PARC)

The Pesticide Analytical and Response Center (PARC) was created by executive order in 1978. The program was reauthorized under the Oregon Department of Agriculture (ODA) as Oregon Revised Statute (ORS) 634.550, in 1991.

PARC is mandated to perform the following activities with regard to pesticide-related incidents in Oregon that have suspected human/animal health or environmental effects:

- Collect incident information
- Mobilize expertise for investigations
- Identify trends and patterns of problems
- Make policy or other recommendations for action
- Report results of pertinent investigations, and
- Prepare activity reports for each legislative session.

PARC does not have specific regulatory authority of its own. Rather, PARC functions to coordinate its member agencies activities to collect and analyze information about reported

pesticide-related incidents. Investigation coordination includes collecting reports produced by member agencies and consultation as necessary with toxicologists of Oregon State University and the Oregon Health Sciences University. Other governmental bodies may also participate in the reporting or investigation of an incident.

The eight member agencies include the following:

- Oregon Health Authority (OHA)
- Oregon Department of Fish and Wildlife (ODF&W)
- Oregon Department of Environmental Quality (DEQ)
- Oregon Department of Forestry (ODF)
- Oregon Occupational Safety and Health Administration (OR-OSHA)
- Office of the State Fire Marshall (SFM)
- Oregon Poison Control Center (OPC), and
- Oregon Department of Agriculture (ODA)

IPM in Schools

The School IPM Law became effective July 1, 2012.

IPM is a common-sense strategy that integrates multiple tactics to reduce pest populations to an acceptable level. Strategies include sanitation, pest exclusion, cultural practices, biological control and mechanical control while limiting the use of chemicals. IPM weighs the risks and benefits of pest reduction methods to determine the most environmentally and economically sound manner to manage pests.

The law addresses the implementation of Integrated Pest Management (IPM) practices in schools and requires all Oregon pre-kindergarten, public and private K-12 schools, community colleges, federal Head Start programs, Oregon School for the Deaf, Oregon Youth Authority residential academy, and education service districts to implement IPM practices as well as other requirements, Oregon Revised Statutes (ORS) 634.700-634.750.

There are a number of requirements mandated by the law, including that pesticide applications on public or private school property (K-12 and community colleges) need to be conducted by a licensed pesticide applicator. Applications of disinfectants and insecticidal soap are exempt from the school IPM requirements.

Under the School IPM Law, if an individual is an employee of a public school, he or she must have a Public Pesticide Applicator license. If an applicator is an employee of a private school, he or she will need to have a Commercial Pesticide Applicators license.

Schools also have the option of hiring a licensed Commercial Pesticide Applicator (employed by a Pesticide Operator [a pest control company]) to make any necessary pesticide applications.

Public school employees: The new IPM in schools law (ORS 634.700) now requires a Public Pesticide Applicator license, Apprentice or Trainee license for every public school employee applying pesticides (except antimicrobials or insecticidal soaps). Apprentices and trainees must work under the supervision of a fully certified and licensed applicator.

Private school employees: Employees of private schools must have a valid Commercial Pesticide Applicator license to apply any pesticide (except antimicrobials or insecticidal soaps) to private school property. Apprentices and Trainees must work under the supervision of a fully certified and licensed applicator.

Companies contracted to conduct pesticide applications on school property: If a company is hired to apply pesticides on school property, the company must be licensed as a commercial pesticide operator and each individual applicator (person) must be licensed as either a Commercial Pesticide Applicator, Apprentice, or Trainee. The licensing status of the company and applicator, including apprentices or trainees, should be verified by checking the ODA website: https://oda.direct/AboutPesticides.

The School IPM Law has specific notification and recordkeeping requirements, and limitations on what pesticides can be used. A school's governing body is responsible for plan development and implementation.

For additional information about the IPM in School law, please see ORS 634.700-750 or visit the website listed above and click the "Licensing Information" tab and then click on the "Integrated Pest Management (IPM) in Schools" link.

Oregon Department of Environmental Quality (DEQ)

The Department of Environmental Quality is the primary agency involved with environmental regulation in Oregon. The DEQ administers rules governing the management of pesticide residues, waste pesticide disposal, pesticide spill cleanup, and empty pesticide container disposal. The DEQ also issues National Pollution Discharge Elimination System (NPDES) permits for pesticide applications made to, over, or near water.

The DEQ regulates all pesticide residues declared hazardous wastes. As used in this section, the term "residue" means any left-over pesticide that may need to be disposed of (such as banned pesticides, unusable or leftover pesticides, pesticides that have been damaged, etc.); it does not pertain to pesticide products lawfully applied to target sites (including crops), or the remaining residue after a pesticide has been lawfully applied to a target site.

IMPACT OF LAW — PESTICIDE RESIDUE WASTE

Impacted by Law: Applicators who either discard or abandon pesticide residues or accumulate pesticide residue on-site, must manage and dispose of pesticide waste under the regulations in OAR 340-109-0010.

Not Impacted by Law: Pesticide applicators do not trigger waste-management regulations when legally using a pesticide according to label-use directions, and in accordance with state and federal laws. This includes using pesticide container rinse water, or diluted pesticides.

For more information, contact the Oregon DEQ.

Pesticide Wastes

When pesticide products are banned, phased out, damaged or unusable, the resulting wastes often accumulate for years because of the lack of cost-effective or convenient disposal options. Product waste containers degrade over time, increasing the risk of pesticide releases into the environment. Oregon regulations (OAR 340-109-0010) require some basic management practices and labeling for waste pesticides. Collecting these wastes is part of DEQ's Toxic Reduction Strategy. Pesticides collected during waste-collection events can be handled in a number of ways, including in some specialized situations being handled under the Resource Conservation and Recovery Act (RCRA). RCRA was enacted in 1976 and is the principal law in the United States that regulates solid and hazardous waste, which includes pesticides, pesticide spill clean up and pesticide waste. The United States Environmental Protection Agency (U.S. EPA) administers this law on a national level. In Oregon, it is administered by DEQ. As a result of this law and the matching regulations, many chemicals (including pesticides) may be considered "hazardous wastes."

Under this RCRA, the person who produces hazardous waste is responsible for proper handling and disposal of the waste.

To find out more about managing pesticide container residues and decontaminated containers, see OAR 340-109-0001, Division 109; or contact the Hazardous Waste Management program within DEQ.

Empty container disposal

Rigid pesticide containers (plastic, metal, and glass) should be decontaminated (rinsed), and if possible, re-use the rinse water for pesticide application or mixing. Decontamination of rigid containers consists of removing any residual pesticides by jet or multiple rinsing.

Pesticide containers should not be punctured or crushed unless they have been decontaminated. Never puncture or crush glass containers; take them to a waste pesticide collection event. Pesticide containers that are punctured and crushed are by definition "decontaminated." Decontaminated pesticide containers are not hazardous waste and may be

recycled at a collection site or event, or disposed of at a landfill.

Empty non-rigid pesticide containers, including paper, paper-laminated and paper-laminated foil bags, may be (1) Disposed of in a permitted solid waste landfill; or (2) Burned in an incinerator or boiler, which has been permitted by DEQ to burn this type of waste.

Decontamination methods may be different based on the type and size of container, and if the container has been designated as a "returnable/re-fillable container that is intended to be returned to the retailer for re-use.

For more information on managing pesticide waste and container management, contact DEQ or see Chapter 340 Division 109, Management of Pesticide Waste.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

The NPDES permit program controls water pollution by regulating point-source discharges of pollutants into waters of the United States and authorized by the Federal Clean Water Act of 1972.

An Oregon NPDES pesticide general permit is required by a federal court order for certain pesticide applications, in, over, or near waters of the state. It is implemented in Oregon by the Department of Environmental Quality (DEQ) under an agreement with the US Environmental Protection Agency (EPA).

The Pesticide General Permit (PGP) specifically regulates pesticide applications in, over, or near water to control the following:

- Mosquitoes and other flying insect pests
- Weeds and algae
- Nuisance animals
- Forest canopy pests
- Other pests that must be controlled under area-wide programs

All individuals, businesses, and property owners responsible for pesticide applications in the five categories listed above must comply with certain basic requirements of the permit. A higher level of permit conditions is required for all federal and state agencies, weed and vector control districts, and for certain other entities that exceed annual treatment area thresholds defined by DEQ.

For more information, contact the DEQ.

Oregon Occupational Safety and Health Administration (OR-OSHA)

OR-OSHA is the agency that enforces most worker protection laws in Oregon, and it addresses all areas of worker safety on the job. The Worker Protection Standard (WPS), for

pesticides; and the Oregon Hazard Communication Standard (HCS) are both administered by OR-OSHA.

OR-OSHA also addresses:

- Pesticide storage compliance,
- Emergency first aid-including the provision of an emergency eye wash,
- Decontamination supplies
    - Since WPS required that employers provide clean water, soap and disposable towels for pesticide decontamination, OR-OSHA does not consider hand sanitizer as an effective way to remove pesticides from the skin.
- Supervision by the employer as it pertains to the employees, engaged in activities such as:
    - Pesticide handling,
    - Transportation of pesticides,
    - Wearing and properly maintaining personal protection equipment (PPE).
- Use of personal protection equipment including respiratory protection, and
- The specific rules associated with the use of fumigants and the fungicide Thiram.

The Hazard Communication Standard (HCS) applies to all employers. It requires employers to have:

- A written hazard communication program,
- A labeling system (for secondary containers), including the name of the pesticide and signal word, and safety data sheets (SDS), previously called Material Safety Data Sheets (MSDS),
- Employee information and training to inform employees of the physical and health hazards, and the emergency procedures for the chemicals found in their workplace.

EPA's Worker Protection Standard Regulation (40 CFR Part 170)

Please note: The information about the Worker Protection Standard (WPS) below reflects the EPA's federal-level version of the WPS and also Oregon OSHA, current at the time of publication. Applicators and employers of handlers and workers should check Oregon OSHA's website (www.orosha.org) for additional details about the requirements in Oregon.

WPS is intended to reduce the incidence of occupational pesticide exposure and related illnesses and injuries among agricultural workers and pesticide handlers covered by the rule. The WPS requires employers to provide agricultural workers and pesticide handlers with certain protections.

WHO IS RESPONSIBLE FOR PROVIDING THE PROTECTIONS?

- Agricultural employers on agricultural establishments, which are defined as any farm, forest operation, or nursery engaged in the outdoor or enclosed space production of agricultural plants and will be referred to in this document as agricultural establishments.
- Commercial pesticide handling establishment employers, which are defined as any enterprise, other than an agricultural establishment, that provides pesticide handler or crop advising services to agricultural establishments. Examples include aerial application companies, field application companies, etc.

WHO IS PROTECTED?

- Workers: Those whose work activities are directly related to the production of agricultural plants on an agricultural establishment.
- Pesticide handlers: those employed by an agricultural employer or commercial pesticide handler employer and perform tasks directly or indirectly related to pesticide applications.
- Any other person on agricultural establishments during pesticide applications and while the restricted entry interval (REI) is in effect.

WHEN DOES THE RULE APPLY?

This regulation applies whenever a pesticide product label contains the Agricultural Use Requirements box, which requires compliance with the Worker Protection Standard (WPS) when used in the production of agricultural plants on an agricultural establishment, including retail outlets such as garden centers.

Agricultural Use Requirements
(For Ground Application Only)
Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:
- Coveralls
- Chemical-resistant gloves such as barrier laminate, nitrile rubber, neoprene rubber, or viton
- Shoes plus socks

THE WPS DOES NOT APPLY ON AGRICULTURAL ESTABLISHMENTS WHEN PESTICIDES ARE USED AS FOLLOWS:

- As part of government-sponsored public pest control programs over which the owner,

agricultural employer, and handler employer have no control (e.g., mosquito abatement, Mediterranean fruit fly eradication programs, etc.); or

- On plants other than agricultural plants, which may include plants in home, fruit and vegetable gardens, home greenhouses, and permanent plantings for ornamental purposes, such as plants that are in ornamental gardens, parks, public or private landscaping, lawns, or other grounds that are intended only for aesthetic purposes; or
- For control of vertebrate pests, unless directly related to the production of agricultural plants; or
- When the product does not bear the Agricultural Use Requirements box.

Pesticide labels differentiate between Agricultural Use Requirement boxes, which contain information for WPS, and Non-Agricultural Use Requirement boxes, which contain non-WPS pesticide safety information. Below is an example of a Non-Agricultural Use Requirement Box:

Non-Agricultural Use Requirements
(For Ground Application Only)
The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.
Entry Restrictions for Non-WPS Uses: Do not enter or allow others to enter the treated area until sprays have dried.

THE AGRICULTURAL ESTABLISHMENT IS RESPONSIBLE FOR THE FOLLOWING PROTECTIONS:

- Annual pesticide safety training for workers and handlers, with no grace period;
- Providing personal protective equipment (PPE) as required on product labeling;
- Oral and posted notification of worker, entry restrictions;
- Employer Information Exchange;
- Availability of Hazard Communications Materials and Pesticide Safety Information;
- Certain Entry Restrictions During Application for Outdoor Production, including an Application Exclusion Zone (AEZ), which varies depending on the type of application; and;
- Providing decontamination supplies.

ANNUAL TRAINING

Before any worker performs any task in a treated area on an agricultural establishment, and within the last 30 days, either a pesticide product has been used, or a restricted-entry interval for such pesticide has been in effect, the agricultural employer must ensure that each worker has been trained.

RESTRICTED ENTRY INTERVAL (REI)

The restricted entry interval (REI) is the time immediately after a pesticide application when entry into the treated area without the proper early entry personal protective equipment (PPE) stated on the pesticide label is restricted. REIs can vary in length. For instance, some pesticides may have one REI, such as 48 hours hours, for all crops and uses, including methods of application. Other pesticides have different REIs depending on the crop, method of application, or the post-application activity to be performed.

When two or more pesticides are applied at the same time and have different REIs, the longer REI must be followed. The REI is listed on the pesticide label under the heading "Agricultural Use Requirements" in the "Directions for Use" section of the pesticide label, or next to the crop or application method to which it applies.

Because the REI can vary depending on the pesticide being used, it is important for agricultural employers to consider the REI when making decisions about scheduling maintenance, weeding, irrigation or other activities which may involve workers entering treated areas.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE includes specific clothing and safety equipment that is worn to protect the body from contact with pesticides or pesticide residues, including, but not limited to, coveralls, chemical-resistant suits, chemical-resistant gloves, chemical-resistant footwear, respirators, chemical-resistant headgear, and protective eyewear.

Agricultural employers are responsible for supplying workers and pesticide handlers with the PPE listed on the label.

APPLICATION EXCLUSION ZONE (AEZ)

The "Application Exclusion Zone" or AEZ is a new term used in the WPS rule and refers to the area surrounding the pesticide application equipment that must be free of all persons other than appropriately trained and equipped handlers during pesticide applications. In Oregon, the Oregon Occupational Safety and Health Administration (OR-OSHA), administers the AEZ. In 2018, OR-OSHA finalized state-specific rules pertaining to the AEZ that are described below.

How are the AEZ sizes determined and measured?

The AEZ is measured from the application equipment and moves with the application equipment like a halo around the application equipment. The size of an AEZ varies depending on the type of application and other factors, including droplet size and height of nozzles above the planting medium. The AEZ is 100 feet for aerial, air blast, fumigant, smoke, mist and fog applications, as well as certain other spray applications using very fine droplet sizes, unless the pesticide label requires the use of a respirator; the AEZ is 150 feet and the area must be evacuated for a minimum of 15 minutes.

An AEZ of 25 feet is required when the pesticide is sprayed using medium or large droplet sizes from more than 12 inches above the plant medium, and not applied aerially or by air blast spray equipment. An application that does not fall into one of these categories does not require an AEZ.

See the OR-OSHA Decision Matrix on Page 21.

What are the agricultural employer's responsibilities related to pesticide applications and AEZ requirements, and what are the effective dates of these requirements?

The agricultural employer has two responsibilities related to pesticide applications and the new AEZ requirements:

- During any WPS-covered pesticide application whose pesticide label requires the use of a respirator, the agricultural employer must keep workers and all other persons, other than appropriately trained and equipped handlers involved in the application, out of the treated area and the AEZ within the boundary of the agricultural establishment. If the pesticide label does not require the use of a respirator, workers and other persons have the option of sheltering in place (see additional OR-OSHA materials later in this section)

Does the agricultural employer have WPS responsibilities related to the new AEZ requirements if workers or other persons are off his/her establishment?

Starting in January 2018, all handlers performing an application must immediately suspend the pesticide application if any worker or other person, other than an appropriately trained and equipped handler involved in the application, is in the AEZ, regardless of whether such persons are on or off the establishment. If persons within the AEZ are off the establishment, the handler may continue with the application once they have determined that the pesticide will not contact these persons either directly or through drift.

The AEZ requirement imposes no responsibilities on an agricultural employer regarding to workers or other persons who are not on his or her agricultural establishment, as long as the agricultural employer is not the pesticide applicator. However, if the agricultural employer is also the pesticide applicator, then WPS would require him/her to suspend a pesticide application if any worker or other person is within the AEZ but beyond the boundary of the agricultural establishment.

Notice: Starting in 2020, EPA is evaluating possible rule changes to the AEZ off the agricultural establishment.

Notification: Oral and Posted Notification of Treated Areas

Agricultural employers are required to post a warning sign if the REI is greater than 48 hours for outdoor applications, or greater than 4 hours for enclosed spaces such as greenhouses; otherwise, oral or posted notifications are optional, unless the label requires both.

Oral notification must be provided in a manner the worker can understand, before the application or at the beginning of the first work period.

Notifications must include location and description of the treated area, the time during which entry is restricted, and instructions not to enter treated area.

PESTICIDE INFORMATION DISPLAY AND RECORDKEEPING REQUIREMENTS

Pesticide Safety, Application and Hazard Information: When must information be made available and what records must be kept?

Agricultural employers must display specific information at a central posting location whenever any worker or handler they employ is on their agricultural establishment if, within the past 30 days, either a WPS-labeled pesticide product has been applied, or a restricted-entry interval (REI) for such a pesticide has been in effect. The display requirements do not apply to commercial pesticide handler employers, but must communicate specific information to the agricultural employer (see Employer Information Exchange section).

The following safety information must be displayed at an agricultural establishment's central posting location that is readily accessible to workers and handlers at all times during normal work hours:

- **Pesticide safety information**, which can be presented as either a poster developed by EPA, or other equivalent way of providing the required WPS pesticide safety concepts on the EPA poster.
- **Pesticide application information** including:
  - Name of the pesticide applied,
  - Active ingredient(s),
  - EPA registration number,
  - REI,
  - Crop or site treated,
  - Location and description of the treated area(s), and
  - Date(s), start and end times of the application
- **Hazard information** consisting of a copy of the pesticide product safety data sheet (SDS) — formerly called material safety data sheet (MSDS).

In addition, the pesticide safety information (EPA poster or equivalent), must be displayed at the following locations, in addition to the central posting location:

- Any permanent decontamination site, and
- Any location where documentation supplies are required for 11 or more workers.

When must information be displayed?

The information must be displayed within 24 hours after the end of the application, and continue to be displayed for 30 days after the end of the application or end of the REI, whichever is longer. The information does not need to be displayed if workers or handlers are no longer on the agricultural establishment.

How is notification of treated areas different than display of pesticide safety information?

The display of pesticide safety information is required ***in addition*** to posting of treated areas. The display is designed to provide application information for workers, handlers, and other persons on agricultural establishments. Keep in mind that display of safety information is contingent on a pesticide product having been used within the last 30 days, or a restricted-entry interval for such pesticide has been in effect on the establishment within the last 30 days.

Pesticide Application Records

According to federal law, if the pesticide application and hazard information is required to be displayed, the agricultural employer must keep a record of the pesticide application and hazard information on the establishment for two years from the expiration date of the REI of the pesticide.

Pesticide records must be maintained for any covered use of a WPS-labeled pesticide for either general-use or restricted-use pesticides (even if state or tribal laws do not require pesticide recordkeeping).

Employer Information Exchange

Before any application, ***commercial pesticide handler employers such as aerial application companies must*** make sure the owner/operator of an agricultural establishment where a pesticide will be applied, is aware of:

- Location and description of area to be treated;
- Date of application, estimated start time and estimated end time of application;
- Product name, EPA registration number, active ingredient(s), and REI;
- Whether the product label requires both oral warnings and treated area posting; and
- All other safety requirements on labeling for workers or other people.

Owners/operators of agricultural establishments must make sure any commercial pesticide handler employer they hire is aware of:

- Specific location and description of any treated areas where an REI is in effect that the commercial handler may be in or walk within ¼ mile of, and the restrictions involved in entering those areas.

Access to Pesticide Application and Hazard Information by a Designated Representative

Any worker, handler, or their designated representative may request access to, or a copy of, any information required to be retained for 2 years, even if they are no longer employed by the agricultural employer, but were employed during the period when the information was required to be displayed and maintained. The agricultural employer must provide access to, or a copy, of the requested information applicable to the worker's or handler's time of employment on the

establishment within 15 days after receiving any such request.

Workers and handlers must make the request orally or in writing. If the request is made through a designated representative, the request must contain a written statement clearly designating the representative to request pesticide application and hazard information on the worker's or handler's behalf. The request should include the worker's or handler's printed name and signature, the date of the designation, and the printed name and contact information for the designated representative.

Anti-Retaliation

Employers must not retaliate against a worker or handler who attempts to comply with the WPS, files a complaint, or provides information in an investigation of alleged WPS noncompliance.

Decontamination Supplies

The employer of the agricultural establishment is required to provide accessible decontamination supplies in a single location, within ¼ mile of all workers and handlers

- 1 gallon of water per worker and 3 gallons of water per handler at the beginning of each work period for routine and emergency decontamination
- Plenty of soap and single-use towels
- A clean coverall (or other clean change of clothes) for handlers
- When a product requires protective eyewear for ***handlers***, and/or when using a closed system under pressure, provide the following in mixing and loading areas: a system that can deliver gently running water at 0.4 gallons per minute for at least 15 minutes or 6 gallons of water in containers suitable for providing a gentle-eye-flush for about 15 minutes.
- When applying a product that requires protective eyewear, provide 1 pint of water per ***handler*** in portable containers that are immediately available to each handler.

Definitions

Designated Representative: any persons designated, in writing, by a worker or handler to exercise a right of access on behalf of the worker or handler to request and obtain a copy of the pesticide application and hazard information.

Safety Data Sheets (SDS): Safety Data Sheets contain technical safety information about a pesticide.

Restricted Entry Interval (REI): The restricted entry interval is the time immediately after a pesticide application when entry into the treated area is restricted.

Worker: any person, including a self-employed person, who is employed and performs activities directly relating to the production of agricultural plants on an agricultural establishment.

QUICK REFERENCE GUIDE TO THE WORKER PROTECTION STANDARD (WPS) AS REVISED IN 2015

The WPS is a federal regulation designed to protect agricultural workers (people employed in the production of agricultural plants) and pesticide handlers (people mixing, loading, or applying pesticides or doing certain tasks involving direct contact with pesticides). Each section links to the Code of Federal Regulations (40 CFR Part 170) for more information on the revised WPS. (www.ecfr.gov)

The guide summarizes the maximum requirements under the revised WPS. It does not include exemptions and exceptions that may allow you to do less. See the referenced sections below.

Exemptions (general) 170.303 (b) and 170.601

Exceptions for **workers** 170.401 (b) and 170.409 (a)(2)

Exceptions for early-entry **workers** during a restricted-entry interval 170.603

Exceptions for **handlers** 170.501 (b)

Exceptions to PPE required on pesticide labels 170.607

Employer Responsibilities for Supervisors and Labor Contractors

Employers must provide sufficient information to supervisors and/or labor contractors to ensure compliance with the revised WPS. Specify:

- The tasks supervisors/labor contractors must do, and
- The information they must provide to workers/handlers.

Employers are liable for a penalty under FIFRA if a supervisor or labor contractor acting for them fails to comply with the revised WPS requirements. 170.309 (d), 170.313 (d), 170.317 (c)

Duties for ALL Employers

These requirements apply to agricultural employers and commercial pesticide handler employers except the pesticide safety, application and hazard information requirements apply only to agricultural employers.

Anti-Retaliation

Employers must not retaliate against a worker or handler who attempts to comply with the WPS, files a complaint, or provides information in an investigation of alleged WPS noncompliance. 170.315

Minimum Age Requirements

1. Ensure that early-entry workers and all handlers are at least 18 years old. 170.309 (c) and 170.313 (c)

Pesticide Safety, Application and Hazard Information

An agricultural employer must display or make certain information available on the establishment. Commercial pesticide handler employers do not have to comply with information display requirements.

1. Display or make available all of the information listed in #2 together in an easily accessible ("central") location on the agricultural establishment. 170.311 (a)(5) and 170.311 (b)(2)
2. The information includes:
   - EPA WPS safety poster or equivalent information, which must include some additional information by January 2, 2018, and must be kept current. 170.311 (a)
   - Application information that includes:
     - Product name, EPA registration number, and active ingredient
     - Crop or site treated, location and description of the treated area
     - Date, start and end times of the application, and duration of restricted-entry interval (REI). 170.311 (b)(1)
   - A copy of the safety data sheet (SDS) for the formulated product for each WPS-labeled pesticide applied. 170.309 and 170.311
3. In addition, display the EPA WPS safety poster (or equivalent) where decontamination supplies are located at permanent sites and where decontamination supplies are provided for 11 or more workers. 170.311 (a)(5)
4. Allow workers and handlers unrestricted access to all of the information and keep all of the displayed information current and legible. 170.311 (a)(6)-(7) and 170.311 (b)(3)-(4)
5. Display the EPA WPS safety poster or equivalent information before an application takes place and for 30 days after the REI expires. 170.309 (h)
6. Display the SDS and application information within 24 hours of the application and before workers enter treated areas. This information must be displayed for 30 days after the REI expires and kept in records on the agricultural establishment until 2 years after the REI expires. 170.309 (h)&(l) and 170.311 (b)(5)-(6)
7. Provide the SDS and application information upon request of a worker, handler, designated representative or medical personnel, within 15 days. 170.311 (b)(7)-(9)

Pesticide Safety Training

Ensure that **workers** are trained before performing tasks in a pesticide treated area (REI in effect within the last 30 days). 170.401 (a) Ensure that **handlers** are trained before performing any handler activity. 170.501 (a) There is no grace period for worker or handler training.

1. Train workers and handlers annually. 170.401 (a) and 170.501 (a)
2. Present training using EPA-approved materials either orally from written materials or audio-visually. After January 2, 2018, the training must cover additional topics. 170.401 (c) and 170.501 (c)
3. Trainers must be certified applicators or have completed an EPA-approved train-the-trainer program or be designated by the State or Tribal pesticide enforcement agency. 170.401 (c)(4) and 170.501 (c)(4)
4. Training must be delivered in a manner the employees can understand, and the trainer must be present and respond to questions. 170.401 (c)(1) and 170.501 (c)(1)
5. Maintain training records on the establishment for two years from the training date for each worker and handler required to be trained on the agricultural establishment. 170.401 (d) and 170.501 (d)

Continued on next column

Separate from the pesticide safety training, employers must tell workers and handlers where to find the following on the worksite: EPA WPS safety poster (or equivalent), application information, SDSs and decontamination supplies. 170.403 and 170.503 (b)

Decontamination Supplies

1. Establish accessible decontamination supplies located together within 1/4 mile of all **workers** (when required 170.411 (c)) and **handlers**. 170.411 and 170.509
   - 1 gallon of water per worker and 3 gallons of water per handler at the beginning of each work period for routine and emergency decontamination,
   - Plenty of soap and single-use towels, Note: hand sanitizers and wet towelettes are insufficient. 170.411 (b)(2) and 170.509 (b)(2)
   - A clean coverall (or other clean change of clothes) for handlers
2. Provide water that is safe and cool enough for washing, eye-flushing, and drinking. Do not use water that is also used for mixing pesticides unless steps are taken to ensure safety. 170.411 (b)(1)
3. Provide **handlers** with decontamination supplies where personal protective equipment (PPE) is removed at the end of a task. 170.509 (a)
4. Provide **handlers** with decontamination supplies at each mixing and loading site. 170.509 (c)(1)
5. When a product requires protective eyewear for **handlers**, and/or when using a closed system under pressure, provide the following in mixing and loading areas: a system that can deliver gently running water at 0.4 gallons per minute for at least 15 minutes or 6 gallons of water in containers suitable for providing a gentle eye-flush for about 15 minutes. 170.509 (d)(1)
6. When applying a product that requires protective eyewear, provide 1 pint of water per **handler** in portable containers that are immediately available to each handler. 170.509 (d)(2)
7. Do not put **worker** decontamination supplies in areas being treated or under an REI. 170.411 (d)
8. For **handlers**, decontamination supplies must be kept outside the treated area, or any area under an REI, unless they are protected from contamination in closed containers. 170.509 (c)(1)&(3)

Employer Information Exchange

1. Before any application, commercial pesticide handler employers must make sure the owner/operator of an agricultural establishment where a pesticide will be applied, is aware of:
   - Location and description of area to be treated,
   - Date of application, estimated start time and estimated end time of the application,
   - Product name, EPA registration number, active ingredient(s), and REI,
   - Whether the product label requires both oral warnings and treated area posting,
   - All other safety requirements on labeling for workers or other people. 170.313 (i)
2. Owners/operators of agricultural establishments must make sure any commercial pesticide handler employer they hire is aware of:
   - Specific location and description of any treated areas where an REI is in effect that the commercial handler may be in or walk within 1/4 mile of, and,
   - Restrictions on entering those areas. 170.309 (k)

The commercial pesticide employer must pass this information along to the handler doing the work. 170.313 (h)

Emergency Assistance

If there is reason to believe a worker or handler has been exposed to pesticides, during or within 72 hours of employment, and needs emergency medical treatment, employers must do the following:

1. Promptly make transportation available to an appropriate emergency medical facility.
2. Promptly provide to the treating medical personnel, information related to each pesticide product to which the person may have been exposed:
   - Safety Data Sheet
   - Product name, EPA registration number, and active ingredient(s).
   - Description of how the pesticide was used on the agricultural establishment.
   - Circumstances that could have resulted in exposure to the pesticide. 170.309 (f)

In Oregon, the Oregon Department of Occupational Safety and Health Administration (OR-OSHA) administers the WPS, including Oregon-specific regulations regarding the Application Exclusion Zone (AEZ), a rule designed to help prevent pesticide exposures to both workers and other persons. Additional AEZ information can be found on the following page.

Additional Agricultural Employer Duties

Before allowing persons not directly employed by the establishment to clean, repair, or adjust pesticide application equipment, provide the following information:

- The equipment may be contaminated with pesticides.
- The potentially harmful effects of pesticide exposure.
- How to handle equipment to limit exposure to pesticides.
- How to wash themselves and/or their clothes to remove and prevent exposure to pesticide residues. 170.309 (g) and 170.313 (l)

Additional Duties for Handler Employers

These requirements apply to commercial pesticide handler employers and agricultural employers who employ handlers.

Application Restrictions and Monitoring 170.505

1. Do not allow handlers to apply a pesticide so that it contacts, directly or through drift, anyone other than appropriately trained and equipped handlers.
2. Handlers must suspend applications when anyone other than appropriately trained and equipped handlers enter the application exclusion zone (AEZ). This goes into effect on January 2, 2018. 170.505 (b)
3. When anyone is handling a highly toxic pesticide with a skull and crossbones, maintain sight or voice contact every two hours.
4. Make sure a trained handler equipped with labeling-specific PPE maintains constant voice or visual contact with any handler in an enclosed-space production site (e.g., greenhouses, high tunnels, indoor grow houses) while applying a fumigant.

Specific Instructions for Handlers

1. Before handlers do any handling task, inform them, in a manner they can understand, of all pesticide labeling instructions for safe use. 170.503 (a)(1)
2. Ensure that the handler has access to product labeling during the entire handling task. 170.503 (a)(2)

Equipment Safety

1. Inspect pesticide handling equipment before each day of use, and repair or replace as needed. 170.309 (j) and 170.313 (g)
2. Allow only appropriately trained and equipped handlers to repair, clean, or adjust pesticide equipment that contains pesticides or residues, unless they are not employed on the establishment. 170.309 (g) and 170.507 (a) See Additional Agricultural Employer Duties for information regarding non-employed persons.

Personal Protective Equipment (PPE) Handlers Must Use

1. Provide handlers with the PPE required by the pesticide labeling, and be sure it is: 170.507 (b)
   - Clean and in operating condition, 170.507 (b)
   - Worn and used according to the manufacturer's instructions, 170.507 (c)
   - Inspected before each day of use, 170.507 (c)(2)
   - Repaired or replaced as needed. 170.507 (c)(2)
2. When a respirator is required by product labeling, provide handlers with:
   - A medical evaluation to ensure the handler is physically able to safely wear the respirator,
   - Training in respirator use, and
   - A fit test to ensure the respirator fits correctly.
   - Keep records on the establishment of these items for two years. 170.507 (b)(10)
3. Take steps to avoid heat-related illness when labeling requires the use of PPE for a handler activity. 170.507 (e)
4. Provide handlers a pesticide-free area for:
   - Storing personal clothing not in use,
   - Putting on PPE at start of task,
   - Taking off PPE at end of task. 170.507 (d)(9)
5. Do not allow used PPE to be taken home. 170.507 (d)(10)

Care of PPE

1. Store and wash used PPE separately from other clothing and laundry. 170.507 (d)(3)
2. If PPE will be reused, clean it before each day of reuse, according to the instructions from the PPE manufacturer unless the pesticide labeling specifies other requirements. If there are no other instructions, wash in detergent and hot water. 170.507 (d)(1)
3. Dry the clean PPE before storing. 170.507 (d)(4)
4. Store clean PPE away from personal clothing and apart from pesticide-contaminated areas. 170.507 (d)(5)

Replacing Respirator Purifying Elements

1. Replace particulate filters or filtering facepiece respirators when any following condition is met:
   - When breathing becomes difficult,
   - When the filter is damaged or torn,
   - When the respirator label or pesticide label requires it,
   - After 8 total hours of use, in the absence of any other instructions or indications of service life. 170.507 (d)(6)
2. Replace vapor-removing cartridges/canisters when any following condition is met:
   - When odor/taste/irritation is noticed,
   - When the respirator label or pesticide label requires it (whichever is shorter),
   - When breathing resistance becomes excessive,
   - After 8 total hours of use, in the absence of any other instructions or indications of service life. 170.507 (d)(7)

Disposal of PPE

1. Discard, do not clean, coveralls and other absorbent materials that are heavily contaminated with pesticide having a signal word "DANGER" or "WARNING." When discarding PPE, ensure that it is unusable as apparel or made unavailable for further use.
2. Follow federal, state, and local laws when disposing of PPE that cannot be cleaned correctly. 170.507 (d)(2)

Instructions for People Who Clean PPE

170.507 (d)(8)

The handler employer must inform people who clean or launder PPE:

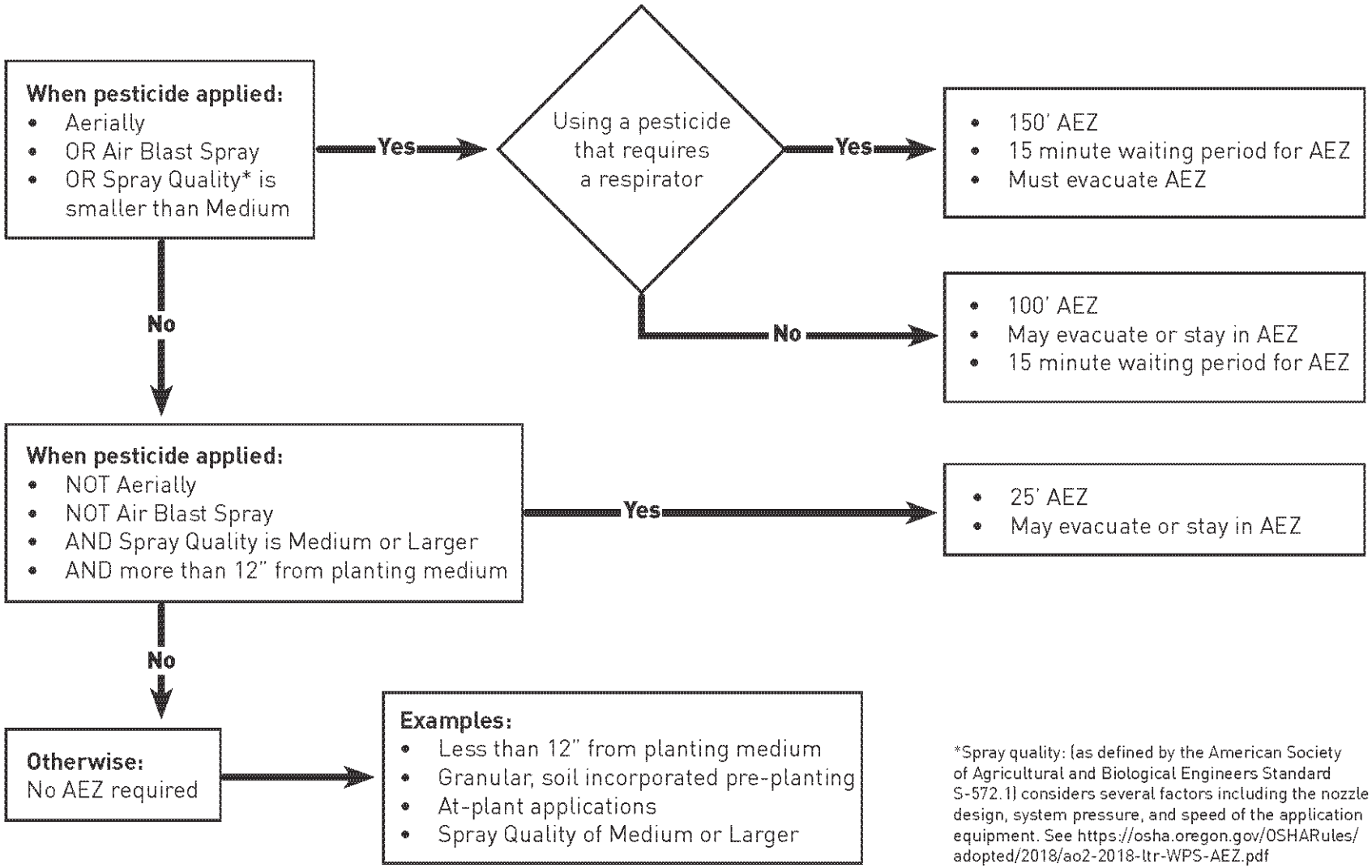
- That PPE may be contaminated with pesticides,
- Of the potential for harmful effects of exposure to pesticides,
- How to protect themselves when handling PPE,
- How to clean PPE correctly, and
- Decontamination procedures to follow after handling contaminated PPE.

EPA United States Environmental Protection Agency
epa.gov

PERC Pesticide Educational Resources Collaborative
pesticideresources.org

This was developed under cooperative agreement #X8-83616301.
EPA-305-B-16-001

Worker Protection Standard, Application Exclusion Zone (**AEZ**) decision matrix



*Spray quality: (as defined by the American Society of Agricultural and Biological Engineers Standard S-572.1) considers several factors including the nozzle design, system pressure, and speed of the application equipment. See https://osha.oregon.gov/OSHARules/adopted/2018/ao2-2018-ltr-WPS-AEZ.pdf

Handler: any person, including a self-employed person, who is employed by an agricultural employer or commercial pesticide handler employer and performs activities that put them at increased risk of direct exposure to pesticides, such as mixing, loading, or applying pesticides.

Agricultural Employer: any person who is an owner of, or is responsible for the management or condition of, an agricultural establishment, and who employs any worker or handler.

Commercial Pesticide Handler: any person, other than an agricultural employer, who employs any handler to perform handler activities on the agricultural establishment.

Application Exclusion Zone (AEZ): The area surrounding the application equipment that must be free of all persons other than appropriately trained and equipped handlers during pesticide applications.

Personal Protective Equipment (PPE): devices and apparel that are worn to protect the body from contact with pesticides or pesticide residues.

Central Posting Location: a place on the agricultural establishment where workers and handlers are likely to pass by or congregate and where it can be easily seen and read, where the pesticide application and hazard information must be displayed.

For more information, contact ODA at (503) 986-4635, or Oregon OSHA.

Oregon Department of Forestry (ODF)

The ODF administers the Oregon Forest Practices Act (FPA) Chapter 527, Insect and Disease Control; ORS 527.610–527.99 and the Forest Chemical Rules, Division 629-620-0000 through 629-620-0800, which protect water quality and other natural resources on state and private forestland.

Anyone who conducts a commercial forest management activity (operators as defined by ODF) must notify the ODF at least 15 days before starting operations to allow time for cooperative discussion before activities begin.

The FPA and Forest Practice Chemical Rules apply to any of the following activities that are part of the commercial growing and harvesting of forest trees:

- Pesticide and fertilizer use
- Timber harvesting
- Road construction and maintenance
- Slash treatment, and
- Reforestation.

In certain instances, buffers (no spray zones) near waterways may be required. In addition, 2015 legislation mandated buffers when applying herbicides by aircraft near an inhabited dwelling or school.

For more information, contact ODF.

Oregon Department of Transportation – Motor Carrier Transportation Division

The Motor Carrier Division regulates the transportation of hazardous materials including pesticides in Oregon, and enforces requirements for proper placarding of shipments of hazardous materials transported over public roads and highways.

Contact the Motor Carrier Division for additional information.

Oregon Emergency Response System (OERS)

The purpose of the Oregon Emergency Response System (OERS) is to coordinate, and manage state resources in emergencies involving multiple governmental agencies and the private sector. OERS is the cornerstone of the State Emergency Services System. While OERS responds to spills or releases of a reportable quantity of any hazardous material such as oil, pesticides or any other hazardous material.

EXAMPLE OF A TYPE OF REPORTABLE EMERGENCY

Any person owning or having control over any oil or hazardous material who has knowledge of a spill or release shall immediately notify the Office of Emergency Management as soon as that person knows the spill or release is a reportable quantity, ORS 466.635 (DEQ Statute).

TO ACTIVATE OERS

Local public safety agencies such as law enforcement, fire and other emergency medical service providers will normally provide the first response to an incident, and are activated by calling 911. Responsible parties are also required to report spills and releases to OERS by calling 800-452-0311. OERS provides 24-hour service, 365 days a year.

OERS was established in 1972 to allow for rapid and efficient response to hazardous material spills in the state. It is not an agency as such, but a group of agencies cooperating to provide information and expertise to those who must respond to hazardous material accidents and spills. By reporting spills and accidents involving pesticides and other hazardous materials through the OERS, all of the proper authorities are notified and dispatched to the scene.

Call in Oregon: 800-452-0311

Call outside of Oregon: 503-378-4124

Oregon Health Authority (OHA) — Public Health Division

OHA requires all health care providers, (physicians, nurses, chiropractors, osteopaths, hospitals, etc.) to report confirmed or suspected illnesses from pesticide exposure. Reports are

made to the local health department or directly to the Public Health Division. The possible exposure incident is then reviewed and investigated by the appropriate agency or agencies.

OHA works with the Oregon Poison Control Center to supply health care providers with information on pesticide products and on appropriate tests and medical care for exposed individuals. OHA compiles information on all cases and evaluates the cases for patterns of illness related to a particular chemical or application practices. The information gathered is used to make recommendations to the industry and applicators to prevent problems from re-occurring.

Oregon Water Resources Department (OWRD)

OWRD's authority to regulate back-siphon prevention devices comes from Oregon Revised Statute (ORS) 537.780(1)(b)(A). The requirements for back-siphon prevention devices is covered under Oregon Administrative Rule (OAR) Chapter 690.215.017(3), which require that back-siphon prevention equipment must be installed on any irrigation system connected to a ground water source when fertilizers or any other chemicals are applied through the system. The lack of properly functioning back-siphon devices in an irrigation system can result in contamination of groundwater sources. The landowner or other responsible parties are responsible for assuring that the back-siphon prevention equipment is installed and properly functioning.

If you are planning to apply pesticides and/or fertilizers through irrigation or other water systems, see OAR 690.215.017(3) for regulations governing the use of groundwater and required equipment for chemigation.

For more information, contact the Oregon Water Resources Department.

Office of the State Fire Marshal (SFM)

The Office of the State Fire Marshal administers the Oregon Community Right to Know and Protection Act, ORS 543.307 to ORS 453.520. This Act has requirements for employers, owners and business operators who store hazardous substances at their fixed facilities at or above the threshold quantities, to report to the State Fire Marshal's office information about those substances. Some of the information required to be reported includes:

- The identity of the substance
- The amounts stored at the site, and
- The hazards associated with the substance.

This information is available by hard copy or electronically to health authorities, the general public, federal and state agencies, firefighters, and other emergency personnel who might need to respond to an emergency at the facility. For additional information regarding the Community Right to Know Act or specific requirements.

For more information on the minimum reportable quantities, and other Community Right to Know laws, contact the State Fire Marshal's office.

Chapter 1 Review Questions

1. What state agency(s) regulate pesticide applications made to state and private forest lands?

2. What are the state laws that specifically regulate pesticide applications made to forestland?

3. What is the primary state law that regulates pesticide applications in Oregon?

4. Which state agencies enforce the Worker Protection Standard (WPS) in Oregon?

5. Who does the Worker Protection Standard (WPS) apply to?

6. Who does the Hazard Communication Standard (HCS) apply to?

7. What agency enforces the back-siphon/anti-siphon prevention device rules for chemigation?

8. Who can make pesticide applications to a school campus?

9. Who do you contact in the event of a pesticide spill?

10. Who's responsible for providing Worker Protection Standard protections?

11. Who is protected under the WPS?

12. What types of protections shield Workers and Handlers that file a complaint or provide information in an investigation of alleged WPS non-compliance?

13. Under what conditions must agricultural employers notify Workers and Handlers of pesticide applications?

14. What was the Application Exclusion Zone (AEZ) designed for, and what is its range?

Answers can be found in the Appendix

2 Oregon Pesticide Certification, Recertification, and Licensing

Learning Objectives: Chapter 2

After studying this chapter, you should:

- **Explain the difference between certification and licensing.**
- **Distinguish between the different types of pesticide licenses, who is required to have them, and the activities allowed under each license type.**
- **Understand the different types of license categories.**
- **Describe how the initial certification, and the recertification processes work for different license types.**

CERTIFICATION VS. LICENSING

While certification and licensing might sound like interchangeable terms, they are two distinct processes.

CERTIFICATION

Certification is the process where an individual demonstrates the knowledge and skills to apply pesticides safely and without causing harm or damage to themselves, others, or the environment.

A person typically initially becomes certified when an individual takes and passes all the written examinations necessary for the type of license and work the individual intends to conduct. Certification is the first step toward obtaining a pesticide license.

Certified individuals

For people seeking a Commercial or Public pesticide applicator license, Consultant pesticide license, or a Private pesticide applicator license, the certification period begins the day after the individual has successfully passed the required exam or exams.

The certification period is for a period of time up to five years. The certification period for a Commercial or Public pesticide applicator, Private pesticide applicator, or a Consultant pesticide license expires on December 31st of the fifth (5th) year. The certification period begins even if an individual does not apply for the license.

If an unlicensed individual is required to pass the Laws and Safety exam and at least one category exam to qualify for a pesticide license, they have two years from the time they pass the Laws and Safety exam to pass the category exam. The exam score(s) for a licensed individual is

valid for as long as the license is valid and the certification period is current.

The exam score(s) for an unlicensed individual is good for two years from the date it was passed, even if the individual has not applied for the apprentice license, or other type of license.

Uncertified individuals

Trainees such as, Apprentices and Immediately Supervised Trainees are not certified pesticide applicators, and therefore do not have certification periods. However, trainees still need to be licensed.

Individuals seeking a Pesticide Apprentice license must take and pass the Laws and Safety exam. The licensing period for a Pesticide Apprentice license does not begin until the license has been issued.

HOW TO OBTAIN A PESTICIDE LICENSE

To obtain a license, a person must: (1) pass any required exam(s), (2) complete and submit the pesticide license application form, (3) submit the required fee(s), and (4) meet any other requirements.

Licensing is the process to obtain a pesticide license once a person has met the certification requirements for the license type they are seeking.

Pesticide applications cannot be made until the pesticide license has been issued.

Currently, the minimum age to obtain a private pesticide applicator's license in Oregon is 16. However, because of changes in federal law, in the future a person must be at least 18 years old.

You must currently be at least 18 years of age to obtain a Commercial, Public, Apprentice, or Immediately Supervised Trainee license (ORS 634.122(1)(a), ORS 634.116(13), ORS 634.116(14), ORS 634.126(1)(a)).

Fee payment note: If the Oregon Department of Agriculture receives a license application in the last 45 days of the year (November 17th-December 31st) and you qualify for a license in the following year (e.g. you are certified), you will be issued a license that extends through the remainder of that calendar year, plus the next calendar year.

Example: 1-Year License

License Application Date	License Expiration Date
January 2, 2020	December 31, 2020
November 16, 2020	December 31, 2020
November 17, 2020	December 31, 2021

With the exception of Private Applicators, all licenses expire on December 31st of each year and are renewable annually.

Pesticide Licensing in Oregon

LICENSING IS NEEDED WHEN:

- Buying, applying, or supervising the use of restricted use pesticides (RUPs), or Advising others on the use of RUPs, or
- Applying pesticides to someone else's property (private or public land) except for provisions in ORS 634.106, or
- Applying pesticides as a public employee using machine-powered equipment and/or applying RUPs, or
- Applying pesticides on school campuses
- Applying certain pesticides, such as paraquat, which must only be applied by certified and licensed applicators
- Applying any pesticide by aircraft (e.g. fixed-wing, helicopter, unmanned aircraft systems).
- Applying unregistered pesticides for research purposes under an appropriate Experimental Use Permit.
- Selling or distributing RUPs (license required for each facility).
- Own or operate a business, non-profit, or organization that advertises pesticide application services or that engages in activities that require employees to be licensed Commercial Pesticide Applicators.

LICENSING IS NOT REQUIRED WHEN:

- Applying general-use pesticides to property owned by you or your employer. Note: If you are non-certified and applying RUPs, you must be supervised by a certified and licensed applicator, and have received specific handler training.
- Public employees apply general use pesticides with non-powered equipment, except on school properties
- Advising others on general use pesticides
- Applying pesticides as a part of landscape maintenance under very specific and limited conditions

For more information, contact ODA.

Please see pages 42-48 for recordkeeping requirements for each license type. Additional information for WPS-related recordkeeping is on Page 17.

License Types

Commercial Pesticide Applicator License (CPA) is a license for a person to:

- Apply or supervise the application of any pesticide (general use, restricted use, and 25b products, including products that are considered to be organic) on the land or property of others.
- Apply restricted-use pesticides (RUPs) to non-agricultural land or property that belongs to you or to your employer.
- Apply general use pesticides (including organic and 25b products) on the property of any Oregon pre- kindergarten, public and private K-12 schools, community colleges, federal Head Start programs, Oregon School for the Deaf, Oregon Youth Authority residential academy, or education service districts (IPM in Schools Law, Oregon Revised Statutes 634.700-750).
- Supervise an Immediately Supervised Trainee or Pesticide Apprentice.
- Provide others with technical advice or recommendations about restricted-use pesticides within the specific application category(ies) listed on the license.
- Solicit to apply pesticides to someone else's property, even if there is no charge for service.
- Note: To make or supervise pesticide applications under this license, you must be employed by a licensed commercial pesticide operator.
- **Required exams:** Laws & Safety, and at least one category exam.
- If the Demonstration and Research exam is successfully passed, this category may be added to the applicator license to allow a person to conduct demonstration plots and/or research trials of pesticides.
- **Required exam:** Demonstration & Research.

Commercial Pesticide Operator License is a license for any business that makes pesticide applications (general use, restricted use, and 25b products, including products that are considered to be organic) to the property of others.

- If the business is some type of a corporation, at least one employee must be licensed as a Commercial Pesticide Applicator.
- If the business is a sole proprietor or partnership, the owner, or at least one partner, must be licensed as a Commercial Pesticide Applicator.
- "Pesticide-related activities are limited to the license categories held by both the Commercial Pesticide Operator and the Commercial Pesticide Applicator they employ."
- A Commercial Pesticide Operator can also employ licensed Pesticide Apprentices and Immediately Supervised Trainees who work under the supervision of a fully licensed Commercial Pesticide applicator.
- The business must provide proof of insurance to maintain their Operator's license.
- A Commercial Pesticide Operator license cannot be issued to a public agency.
- **Required exam:** None

Immediately Supervised Pesticide Trainee License is for individuals who work under the immediate supervision of a Commercial or Public Pesticide Applicator. Trainees may only make applications within their supervisor's categories.

- The supervising applicator is responsible for training the Immediately Supervised Trainee, AND,
- Must be on-site at all times with the trainee when making pesticide applications, AND be able to reach the trainee's location within five (5) minutes.
- Immediately Supervised Trainees are not certified and therefore cannot purchase RUPs.
- This license is issued for up to one year and may be renewed annually.
- **Required exam:** None

Pesticide Apprentice License is available for individuals who work under the supervision of a Commercial or Public Pesticide Applicator. Apprentices may only make applications within their supervisor's categories.

- The supervising applicator is responsible for training the Pesticide Apprentice.
- The supervising applicator does not need to be on site when the Pesticide Apprentice is making pesticide applications, BUT the Pesticide Apprentice must be able to reach the supervising applicator at all times.
- The Pesticide Apprentice is not a certified applicator and cannot purchase RUPS.
- In order to renew this license, beyond the first year, the apprentice will need to attend eight (8) hours of approved continuing education classes each calendar year. The eight hours must consist of at least four (4) hours of CORE credits. If the apprentice does not accrue the required credit hours, they will need to retake the Laws & Safety exam to re-license.
- **Required exam:** Laws & Safety

Pesticide Consultant License is required for a person who provides technical information on restricted-use pesticides. This is not an applicator license.

- **Required exam:** Pesticide Consultant

The Demonstration and Research category is optional and may be added to the Consultant License by taking the Demonstration and Research exam, which allows a person to conduct demonstration plots and/or research trials of pesticides.

- **Required exam:** Demonstration & Research

Private Pesticide Applicator License is needed to purchase, apply, or supervise the use of restricted-use pesticides (RUPs) on land in agricultural production that a person, or their employer owns, leases, or rents. This includes farmland, rangeland, forests, greenhouses, nurseries, orchards, etc. No pesticide license is required to apply "general use" pesticides.

- The license AND certification are valid for a period up to five (5) years.
- **Required exam:** Private Pesticide Applicator

Public Pesticide Applicator License is required for employees of federal and state agencies, counties, cities, municipalities, irrigation districts, drainage districts, soil and water conservation districts or other special districts, public utilities, and telecommunication utilities, who in the course of their work:

- Use or supervise the use of restricted-use pesticides, RUPs and/or;
- Use machine-powered equipment to apply any pesticides, or
- Apply pesticides (including organic and 25b products) on the property of any Oregon pre-kindergarten, public and private K-12 schools, community colleges, federal Head Start programs, Oregon School for the Deaf, Oregon Youth Authority residential academy, or education service districts.
- Public applicators may not function as a Commercial Pesticide Applicators, and need to be aware of the limitations stated in ORS 634.112 and 634.116.
- The Department shall not issue a Commercial Pesticide Operator license to a public entity (ORS 634.116 (2).
- **Required exams:** Laws & Safety, and at least one category exam.
- The Demonstration and Research category may be added to the applicator license to allow a person to conduct demonstration plots and/or research trials of pesticides.
- **Required exam:** Demonstration & Research exam.

Organizations and associations which are classified as "non profit" are not public employers. Confirm your legal status prior to applying for a Public Pesticide Applicator's status.

Aerial Pesticide Applicator License. An Aerial Pesticide Applicator License is required when making pesticide applications by aircraft, including UAVs. The individual must also be licensed as a Commercial, Public or Private Applicator. In addition, 50 or more hours of aerial application experience is required to qualify for the license.

As of January 1, 2017, individuals also are required to pass an exam testing the knowledge of the individual regarding proper application of pesticides by aircraft.

An Aerial Pesticide Applicator is limited to the categories of pesticide application authorized on their Commercial Pesticide or Public Pesticide Applicator license.

The license holder may renew an Aerial Pesticide Applicator license only, if during the preceding five-year period, the holder has successfully completed at least 10 credit hours in programs of instruction or educational courses related to the application of pesticides by aircraft.

- **Required exams:** Aerial Applicator exam.

Pesticide Dealer License is required for each pesticide sales facility that sells, offers for

sale, handles, displays, or distributes restricted-use pesticides (RUPs) to pesticide users.

- Dealers must prepare and maintain sales and distribution records for all restricted-use pesticides for a period of three (3) years. (OAR 603-057-0140).
- **Required exam:** None

License Categories and Subcategories

License categories are broken into areas of related work. Some license categories are divided into subcategories if there are several areas of work within a single category. The related subcategories will have the same main "category" title.

Agriculture – Herbicide	The use of herbicides on agricultural lands (includes Christmas tree plantations and commercial nurseries).
Agriculture – Insecticide/ Fungicide	The use of insecticides and fungicides on agricultural lands (includes Christmas tree plantations and commercial nurseries).
Agriculture – Livestock Pest	The use of pesticides for the control of pests on livestock such as, insects, mites, and ticks.
Agriculture – Soil Fumigation II	The use of soil applied fumigants on agricultural lands on agricultural lands (includes Christmas tree plantations and commercial nurseries).
Agriculture – Vertebrate Pest Control Note: Vertebrate pest control products are specific to the pest species needing to be controlled.	The use of pesticides in agricultural areas to control vertebrate pests other than livestock predators.
Aquatic	The use of pesticides in treating standing or running water.
Demonstration and Research	The use of pesticides for research and demonstration purposes.
Forest	The use of pesticides in the production of forest crops, or on forestry lands (not including Christmas tree plantations or commercial nurseries).

Continued: License Categories

Industrial, Institutional, Health & Structural (IIHS) – General Pest	The use of pesticides other than fumigants, in or around structures, institutions, and establishments for the control and protection of stored, processed, and manufactured products or for the protection of human health.
Industrial, Institutional, Health & Structural (IIHS) – Structural Pest For example: termites, carpenter ants, powder post beetles, etc.	The use of pesticides other than fumigants, in, or around structures for the control of wood destroying pests.
Industrial, Institutional, Health & Structural (IIHS) – Moss Control	The use of pesticides for the control moss and algae on structures.
Industrial, Institutional, Health & Structural (IIHS) – Space Fumigation Note: See Wood Treatment for the field treatment of utility poles, pilings, bridge supports and similar elements of construction.	The use of fumigants in enclosed or confined areas or structures for the control of pests in structures, in stored food or feed, and in other agricultural products.
Industrial, Institutional, Health & Structural (IIHS) – Wood Treatment	The use of pesticides to treat wood products (ie: lumber, poles, ties, etc.) before their use in construction, or to field treat utility poles, pilings, bridge supports, and similar elements of construction with fumigants or other pesticides.
Marine Fouling Organism Control	The use of marine anti-fouling paints or coatings on boat or ship hulls, or other parts of boats or ships.
Ornamental & Turf – Herbicide	The use of herbicides in the establishment and maintenance of ornamental plants and turf.
Ornamental & Turf – Insecticide/ Fungicide	The use of insecticides and fungicides in the establishment and maintenance of ornamental plants and turf.

Continued: License Categories

Public Health	The use of pesticides to control any pest that may be harmful to the public health, including mosquito and any other vector control.
Regulatory Weed Control (For public applicators, apprentices, and trainees)	The use of pesticides for the control of plants designated as noxious weeds.
Right-of-Way	The use of pesticides in right-of-way areas, including road shoulders, utility transmission lines, sub-stations, equipment yards, irrigation ditch banks, etc.
School Integrated Pest Management	The use of pesticides on the campus of a school (defined in ORS 634.700), **excluding** applications of pesticides: • Using power-driven equipment; • To control wood-destroying pests, bed bugs, lice, fleas, ticks, and adult mosquitoes; • Classified as restricted use pesticides (RUPs); • Formulated as total release foggers (except antimicrobial and insecticidal soap products); • Not registered by the Oregon Department of Agriculture; and • To locations not covered by the school's adopted integrated pest management plan.
Seed Treatment	The use of pesticides on seeds.

Additional license categories can be added to a pesticide license through the examination and license application process at any time.

How to Maintain Your License

There are two ways to maintain a pesticide license for the next "certification period."

- Accumulate enough ODA approved credit hours (often referred to as recertification credits), or
- Retake the pesticide exam(s)

The number of credit hours required during your certification period depends on the type of license held.

THE CURRENT CREDIT REQUIREMENTS

Private applicators must:

- Accumulate a total of sixteen (16) credit hours during the up to five-year certification period: four (4) hours MUST be designated as "CORE" credits, and twelve (12) may be designated as "Other" credits.
- No more than eight (8) credit hours may be accumulated in any calendar year (January 1 – December 31).
- Credit hour accumulation may begin the day after the pesticide applicator is certified (passes their exam).

The license is a five-year license.

Pesticide Apprentices are not certified applicators, however, they must:

- Accumulate eight (8) credit hours every calendar year to qualify for annual license renewal.
- Four (4) of the eight (8) hours must be "CORE" credits.
- ***Pesticide recertification credits will not count toward a Pesticide Apprentice license until the Apprentice License has been issued by ODA.***

The license is an annual one-year license.

Commercial Pesticide Applicators, Pesticide Consultants, and Public Pesticide Applicators must:

- Accumulate a total of forty (40) credit hours during the up to five-year certification period.
- No more than fifteen (15) credit hours may be accumulated in any calendar year (January 1-December 31).
- Credit hour accumulation may begin the day after the pesticide applicator is certified.

These are all one-year annual licenses.

Aerial Pesticide Applicators must:

- Accumulate a total of ten (10) aerial-specific credit hours during the up to five-year certification period.
- All ten (10) credit can be earned in a single year or over multiple years during a certification period.
- Credit hour accumulation may begin the day after the aerial pesticide applicator is certified.

The license is an annual one-year license.

Continuing education classes awarded recertification credits

Continuing education classes are offered by a variety of sources including Oregon State University Extension Service, community colleges, agri-chemical dealers, industry associations, and others. Licensees may find approved courses on ODA's web site at: https://oda.direct/PestRecertClasses. New classes are added as they are approved.

Limitations and Responsibilities

- ODA will not grant credits to individuals who do not correctly fill out and sign the ODA Continuing Education Attendance Record after each recertification training session attended. Only ODA Attendance forms are accepted.
- Credit hours cannot be carried forward into new certification periods.
- ODA advises all pesticide license holders to periodically check the classes on their credit history at https://oda.direct/PestCreditHours to make sure ODA has listed them correctly.
- ODA will review possible course entry errors for the previous calendar year only. Errors more than one year old that were not brought to ODA's attention will not be reviewed or considered in credit-hour calculations.
- Core credits will be awarded as regular credits for license holders who do not have a "core" requirement for their particular license type or if the "core" requirement has already been met.
- Sponsors submit hundreds of courses each year for ODA review. These courses are reviewed for content and eligibility for recertification credits. ODA will not award credits for a course that has not been previously approved by ODA. It is your responsibility to see if a course has been awarded ODA credits prior to you taking the course.

Chapter 2 Review Questions

1. What license type would a farmer need in order to legally apply a restricted use pesticide to his field, orchard, forest or nursery?

2. What type of license would a person need in order to legally make pesticide applications, as a business, to someone else's property?

3. What type of license would a person or business need in order to legally sell or distribute restricted use pesticides?

4. If a business has multiple locations, how many Dealer Licenses would be needed to sell and/or distribute restricted use pesticides at all locations?

5. Can a Pesticide Apprentice supervise pesticide applications made by an Immediately Supervised Trainee?

6. Can a Pesticide Apprentice or Immediately Supervised Trainee be supervised by a licensed Commercial or Public Pesticide Applicator who is not physically present at the application site?

7. Who needs to be licensed as a Pesticide Consultant?

8. Can Pesticide Consultants purchase restricted use pesticides to make applications to their own farmland?

Answers can be found in the Appendix

3 Compliance and Enforcement

Learning Objectives: Chapter 3

After studying this chapter, you should:

- **Be able to describe the different types of pesticide inspections conducted by ODA.**
- **Be able to identify the frequently violated prohibited acts.**
- **Describe the different types of enforcement action that ODA may take.**
- **Know the recordkeeping requirements for the different types of pesticide licenses issued by the Oregon Department of Agriculture (ODA).**

ODA has been authorized by the Oregon Legislature to regulate the sale, distribution and use of pesticides in Oregon. Since 1976, ODA has entered into annual cooperative agreements with the Environmental Protection Agency (EPA) regarding enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

ODA is committed to protecting humans and the environment from adverse impacts resulting from the use of pesticides, while maintaining the availability of pesticides as a tool for the production of food, protection of structures, human health, and other beneficial uses.

Activities

ODA investigates complaints regarding alleged pesticide misuse, including drift, licensing issues, bee kills, use inconsistent with labeling, etc.

ODA also conducts inspections to ensure compliance with label requirements, use restrictions, and cancellation/suspension actions.

ODA monitors the distribution (including sale), and use of restricted use pesticides (RUPs). The department also conducts routine investigations of establishments that produce pesticides and/or, repackage pesticides; retail and wholesale distribution outlets; and the import and export of pesticide products. These investigations help determine compliance with state and federal pesticide laws.

The information gathered from complaints, inquiries and investigations often is used to guide educational priorities and for identifying pesticide problem areas.

There are currently 12 types of pesticide inspections/investigations that may be performed. Each type is designed to address a specific type of activity in agricultural and non-agricultural communities.

Inspections and Investigations

The purpose of these investigations is to gather information and/or evidence to determine if pesticides sold, distributed, and applied conform with the Oregon Pesticide Control Law. The Oregon Pesticide Control Law contains a listing of prohibited acts (violations) that pertain to the manufacture, registration, use, and distribution of pesticide products (ORS Chapter 634.372). Through the investigative process, ODA gathers information and/or evidence to determine if compliance with the law has been violated. When ODA determines that a violation has occurred, appropriate enforcement action is taken.

TYPES OF INSPECTIONS AND INVESTIGATIONS

- Agricultural use observation (AUO),
- Agricultural use follow-up (AUF),
- Nonagricultural use observation (NUO),
- Nonagricultural use follow-up (NUF),
- Experimental use permit observations (EUP),
- Producer establishment inspections (PEI),
- Marketplace inspection (MPI),
- Import inspection (IMP),
- Export inspection (EXP),
- Applicator record inspection (ARI),
- Dealer record inspection (DRI),
- Report of loss investigation (ROL), and
- Pesticide Analytical and Response Center investigation (PARC).

PROHIBITIONS OF THE OREGON PESTICIDE CONTROL LAW

The Oregon Pesticide Control Law identifies specific "prohibited acts" that constitutes violations of the law and may result in enforcement action by ODA.

The citation numbers for the most frequently violated prohibited acts are in bold.

634.372 Prohibited acts. A person may not:

(1) Make false or misleading claims through any media, relating to the effect of pesticides or application methods to be utilized.

(2) As a pesticide applicator or operator, intentionally or willfully apply or use a worthless

(Continued) 634.372 Prohibited acts. A person may not:

The citation numbers for the most frequently violated prohibited acts are in bold.

pesticide or any pesticide inconsistent with its labeling, or as a pesticide consultant or dealer, recommend or distribute such pesticides.

(3) Operate a faulty or unsafe pesticide spray apparatus, aircraft or other application device or equipment.

(4) Perform pesticide application activities in a faulty, careless or negligent manner.

(5) Refuse or neglect to prepare and maintain records required to be kept by the provisions of this chapter.

(6) Make false, misleading or fraudulent records, reports or application forms required by the provisions of this chapter.

(7) Operate pesticide applicators' apparatus, machinery or equipment without a licensed pesticide applicator or certified private applicator performing the actual application, or supervising such application if such is performed by a pesticide trainee. This prohibition does not apply to the operation of tractors, trucks or other vehicular equipment used only under the supervision of a certified private applicator.

(8) As a pesticide applicator, work or engage in the application of any classes of pesticides without first obtaining and maintaining a pesticide applicator's license, or apply pesticides that are not specifically authorized by such license.

(9) As a pesticide operator, engage in the business of, or represent or advertise as being in the business of, applying pesticides upon the land or property of another, without first obtaining and maintaining a pesticide operator's license. The operator also may not engage in a class of pesticide application business that is not specifically authorized by license issued by the State Department of Agriculture. The operator also may not employ or use any person to apply or spray pesticides who is not a licensed pesticide applicator or pesticide trainee.

(10) As a pesticide trainee, work or engage in the application of any class of pesticides without first obtaining and maintaining a pesticide trainee's certificate and is otherwise in compliance with the provisions of this chapter.

(11) Act as, or purport to be, a pesticide dealer or advertise as such without first obtaining and maintaining a pesticide dealer's license.

(12) Act as, or purport to be, a pesticide consultant without first obtaining and maintaining a pesticide consultant's license.

(13) Apply any pesticide classified as a restricted-use or highly toxic pesticide to agricultural, horticultural or forest crops on land owned or leased by the person without first obtaining and maintaining a private applicator certificate.

(Continued) 634.372 Prohibited acts. A person may not:

The citation numbers for the most frequently violated prohibited acts are in bold.

(14) As a person described in ORS 634.106 (5), use power-driven pesticide application equipment or devices (use hand or backpack types only), or use or apply any pesticide other than those prescribed by the department.

(15) Deliver, distribute, sell or offer for sale any pesticide that is misbranded.

(16) Formulate, deliver, distribute, sell or offer for sale any pesticide that is adulterated.

(17) Formulate, deliver, distribute, sell or offer for sale any pesticide that has not been registered as required by ORS 634.016.

(18) Formulate, deliver, distribute, sell or offer for sale any powdered pesticide containing arsenic or any highly toxic fluoride that is not distinctly colored.

(19) Distribute, sell or offer for sale any pesticide except in the manufacturer's original unbroken package.

(20) Make application of pesticides, by aircraft or otherwise, within a protected or restricted area without first obtaining a permit for such application from the committee of the protected or restricted area in which the application is to be made. The person also may not make such application contrary to the conditions or terms of the permit so issued.

(21) Use isopropyl ester of 2,4-D, or any other ester of equal or higher volatility with regard to plant damage as determined by the department, without first obtaining a permit for such use as provided in ORS 634.322 (10).

(22) Sell, use or remove any pesticide or device subjected to a "stop sale, use or removal" order until the pesticide or device has been released therefrom as provided in ORS 634.322 (3).

(23) Fail to comply with any provision or requirement of sections 2 to 9, chapter 1059, Oregon Laws 1999, or rules adopted thereunder. [1973 c.341 §34; 1987 c.158 §121; 1995 c.360 §2; 1999 c.1059 §14; 2001 c.307 §3]

TYPES OF ENFORCEMENT ACTION

When violations of ORS 634 are confirmed, ODA may take various types of enforcement action. Examples of types of enforcement actions are listed below.

- Notice of Violation (NOV), is a non-monetary enforcement action.
- Civil Penalties, which are monetary fines.
- License denial, suspension or revocation.
- Re-examination.

When documentation does not clearly support a violation of ORS 634, but specific pesticide use concerns exist, a Letter of Advisement (LOA), will be issued. A LOA is an advisory letter sent by the department to alert an individual or company of a problem or issue that could escalate to violations of state or federal law.

ODA may also make referrals to other entities, such as:

- Another state agency, such as Oregon OSHA
- The Attorney General's Office
- A federal agency, such as EPA or FDA

CIVIL PENALTIES

In ORS 634.900, ODA has the authority to impose civil penalties for violations of the state pesticide law, up to a maximum of $2,000 for the first violation and a maximum of $4,000 for subsequent (additional) violations within a three-year (3) period from the first violation. A maximum civil penalty of $10,000 is authorized for violations that result from "gross negligence or willful misconduct." Exact amounts of civil penalties are calculated according to rules adopted in Oregon Administrative Rule, Chapter 603-057.

Recordkeeping Requirements for Commercial Pesticide Operators, Commercial Pesticide Applicators not employed by an Operator, Pesticide Consultants for Demonstration/ Research trials, and Public Pesticide Applicators

Different agencies have different recordkeeping requirements. Below are records required of Pesticide Operators, and Applicators, as required by both statute and rule. You may need to keep pesticide application and/or training records for multiple agencies and laws, such as ODA, ODF, OR-OSHA, USDA, FDA, IPM in Schools, WPS, etc. Check with each agency for their recordkeeping requirements.

Required record information	Explanation
1. The firm or individual for whom the pesticide application was made.	The full name, address and phone number of the business, firm or individual who owns or controls the crop or property sprayed. Do not use initials, nicknames, or partial names.

Required record information	Explanation
2. The location of the land or property where application was made. Note: Some examples of how to record location are listed, contact ODA to find out if other methods are acceptable.	The address or a geographic description of the application site (such as circle number, maps or aerial photos indicating sprayed area, map number or township/section/range), or GPS coordinates and the size of the area treated (acres, square feet, linear feet, inc.).
3. The date and approximate time of application.	The month/day/year of application, and the beginning **and** ending time of the application.
4. The supplier of pesticides applied.	The full name of the individual or business that supplied the pesticide to you. Do not use initials, nicknames, or partial names.
5. The trade name and the strength of pesticides applied.	The EPA registration number **OR** the manufacturer, product name, and formulation type of each product applied.
6. The amount or concentration (pounds, ounces, or gallons per acre of active ingredient or concentration per approximately 100 gallons). Note: It is best to use the same unit of measure as listed on the pesticide label(s).	A. The amount of each pesticide product applied per unit of measure (ounces, pounds, pints, quarts, etc.) **and**; B. The type and amount of carrier applied per unit of measure (acre, square feet, etc.) **OR**, where a specific unit of measure is not applicable, the total amount applied to the site; **and**; C. The amount and type of other material applied (such as spreader/sticker, wetting agent, or drift retardant).

Required record information	Explanation
7. The specific property, crop or crops to which the pesticide was applied. Note: Maps and drawings of the areas treated with pesticides can be used, but must adequately describe the treated areas.	For each pesticide product applied, the specific crop or site of application: **Agricultural applications** — the specific crop **"Pest Control Operator" (PCO) — "General" and "Structural" applications** — the specific area (exterior wall voids, kitchen cabinets, interior foundation, living room baseboards, etc.) **"Ornamental applications"** — the general area (front yard, hedge, fruit tree, etc.) **Other applications** — descriptions similar to the examples above.
8. The summary information of equipment, device or apparatus used and, if applied by aircraft, the F.A.A. number.	Identification of the application equipment used (aerosol can, speed sprayer, backpack sprayer, fogger, etc.) and, if applied aerially, the "N" number of the aircraft.
9. Name of applicator(s), apprentice(s) or trainee(s) who made application(s).	The full name of the applicator(s). However, if supervising a Pesticide Apprentice or trainee, the full name and pesticide license number of the supervising applicator **and** the apprentice and/or trainee is required.
10. Records kept for three years.	Records shall be maintained for at least three years from the date of application.

While not required under ODA rules, some pesticide labels require the applicator to measure wind speed, wind direction, air and soil temperature. It is suggested that if a label requires the applicator to monitor these conditions, they should be recorded in the application records.

Recordkeeping Requirements for Dealers

Pesticide Dealers shall prepare and maintain records of sales of restricted use pesticides for a period of three (3) years (OAR 603-057-0140), as listed below.

Required record information	Explanation
1. Purchaser a. Name of Purchaser Note: Although the sale of a RUP may only be made to a licensed applicator, the product may be picked up by an unlicensed employee or person designated by the purchaser. b. Address of Purchaser c. License number or certificate numbers of the purchaser. Note: It is recommended to record the expiration date of the pesticide license.	The full name of the certified applicator to whom the restricted use pesticide (RUP) is being sold. Do not use initials, nicknames, partial names, ranch, or company names, Residential or mailing address. Certified pesticide applicator's license number. If the license holder is from a state other than Oregon, identify the state which issued the applicator license.
2. Date of Sale	Month/Day/Year
3. Trade Name of Pesticide(s)	EPA registration number or specific product name, formulation, and manufacturer's name.
4. Quantity of Product Sold	Gallons, pounds, containers, etc. (Define case lots: e.g., 1 case 24 x 15 ounce cans, 2 x 5 gallons, etc.).

USDA Recordkeeping Requirements for Private Pesticide Applicators

United States Department of Agriculture (USDA) regulations require Private Pesticide Applicators to keep records of all applications of restricted use pesticides (RUPs) as listed below. These applications must be recorded within 14 days of the application and legible records must be kept for two (2) years from the date of application.

Required elements	Restricted use pesticides
Applicator Name(s)	✔
Applicator License Number	✔
Month/Day/Year	✔
EPA Registration Number	✔
Brand Name/Product Name	✔
Crop, Commodity, or Site	✔
Size of Area Treated	✔
Total Quantity of Concentrate Applied	✔
Field ID/Location	✔

For more information, see the USDA Recordkeeping Requirements Brochure: www.ams.usda.gov/pesticiderecords

RECORDKEEPING REQUIREMENTS FOR PRIVATE PESTICIDE APPLICATORS MAKING SPOT TREATMENTS USING RUPS

USDA considers spot treatments to be less than 1/10th of an acre. If you apply restricted use pesticides on the same day in a total area of less than 1/10th of an acre, you are required to record the following:

- Name of applicator(s)
- Applicator License Number(s)
- Month/day/year of the application
- EPA Registration Number
- Brand/Trade or Product Name
- Crop, Commodity, or site of application
- Size of treated area
- Total amount of pesticide concentrate applied (actual product, not diluted solution)
- Field ID/location
    - The law allows the Field ID/location to be recorded as county, range, township and section (while not required, subsection is permitted)
    - Maps or written descriptions
    - A USDA identification system, which uses maps and a numbering system to identify field locations
    - Global Positioning System (GPS)

RECORDKEEPING REQUIREMENTS UNDER THE WORKER PROTECTION STANDARD (WPS)

Under WPS, pesticide application and hazard information for any pesticides that are used on the agricultural establishment must be displayed, retained, and made accessible. This includes both restricted use and general use pesticides.

The agricultural employer must retain the information on the agricultural establishment for two years after the date of expiration of the restricted-entry interval applicable to the pesticide application conducted, 40 CFR 170.311(b). These recordkeeping requirements are only applicable for employers subject to WPS requirements.

Pesticide Records under WPS

Required record information
A copy of the safety data sheet (SDS*).
Product name and EPA Reg. No.
Active ingredient(s) in the pesticide product.
The crop or site treated and the location. Description of the treated area.
The date(s) and times the application started and ended.
The duration of the restricted-entry interval (REI) for that application. The REI is stated on the pesticide label, and may vary depending on crop or use pattern.

* A SDS is separate from the label, and used to be called a MSDS

Additional Recordkeeping Requirements for Pesticide Applications Made In or Around Schools

This requirement is for **anyone** making pesticide applications on school properties. Records shall be maintained at the school for a period of four (4) years (ORS 634.750).

Required record information	Explanation
1. Pest Controlled	The pest condition that prompted the pesticide application.
2. Date and Time of Placement and Removal of Warning Signs	Month/Date/Year *and* time of warning sign placement **and** removal of warning sign Month/Date/Year *and* time. of warning sign removal.
3. Application Type and Effectiveness	Formulation type and application method. How effective the application was at solving the problem.
4. Copies and Dates of Notices	Copies of all notices must be kept and the date that the notices were provided to school, staff, parents and adult attendees.
5. Copy of Product Label(s)	Complete label of any product applied.
6. Copy of SDS (formerly called MSDS)	Safety Data Sheets must be maintained for all products applied.

For more information on the IPM in School Law, see ORS 634.700-750.

Chapter 3 Review Questions

1. Who must keep pesticide application records?

2. What information does a dealer need to record?

3. How long must pesticide application records for Commercial Pesticide Operators, Public Pesticide Applicators, Pesticide Consultants and Commercial Pesticide Applicators be kept?

4. How long must a Pesticide Dealer keep sales records?

5. What information does a Public Pesticide Applicator, Commercial Pesticide Operator, Pesticide Consultant and Commercial Pesticide Applicator need to keep on their application records?

6. Under USDA regulations, a Private Pesticide Applicator has how many days to record information about a restricted use pesticide (RUP) application?

7. Under USDA regulations, what information does a Private Pesticide Applicator need to keep for their restricted use pesticide (RUP) applications?

8. Under the Worker Protection Standard, what information does an agricultural employer need to maintain for pesticides that are used on the agricultural establishment?

Answers can be found in the Appendix

4 Special Regulations and Other Important Considerations

Learning Objectives: Chapter 4

After studying this chapter, you should know about:

- Oregon-specific pesticide use regulations, including Oregon Administrative Rules (OAR).
- How buffers may reduce exposure.
- Why practicing co-existence is beneficial.
- Pesticide exposure and aging adults.

Oregon Rule: Limitations on Pesticide Products containing aminocyclopyrachlor, OAR 603-057-0392

On May 9, 2019, the Oregon Department of Agriculture (ODA) adopted OAR 603-057-0392, a permanent rule limiting the use of the herbicide aminocyclopyrachlor (ACP) on certain sites and prohibiting the use on others. ACP is a broadleaf herbicide applied to soil and vegetation and is quickly absorbed by roots and leaves. This rule was adopted in response to multiple reports of negative impacts to tree species, including ponderosa pine and lodgepole pine, in several locations in Oregon where ACP was applied along rights-of-way.

Major provisions of the permanent rule are described in the table on the following page. For more information on this rule, contact the ODA Pesticides Program. The complete rule text for OAR 603-057-0392 is available at https://oda.fyi/OAR603Pesticide.

LIMITATIONS ON PESTICIDE PRODUCTS CONTAINING AMINOCYCLOPYRACHLOR

1	Prohibits the application of ACP on rights of way, natural areas, and restoration areas unless applications are noncontiguous and, in the aggregate, do not exceed more than five percent of an acre; use is limited to one application per 365 days; and use is to control state or county listed noxious weeds.
2	Prohibits the application of ACP on inner and outer banks of ditches and canals.
3	Prohibits ACP use where roots of non-target trees or shrubs may extend
4	Prohibits all aerial application of ACP
5	Prohibits ACP applications in sage grouse areas unless applications are noncontiguous and, in the aggregate, do not exceed more than five percent of an acre: use is limited to one application per 365 days; and use is to control state or county listed noxious weeds.
6	Prohibits plant material that have been treated with or exposed to ACP from being used in compost, mulch or animal bedding that is subsequently used for compost or mulch.
7	Defines rights of way specific to ACP use.
8	Failure to comply may result in revocation, suspension or refusal to issue or renew a certification or license and or civil penalty.

Oregon Rule: Crops Grown for Seed Production, OAR 603-057-0535

Oregon is one of the U.S.'s primary vegetable, forage, flower, herb production, and seed production states. For a number of reasons, when a crop is grown for seed production, different pesticide options may be necessary than if the crop is being grown for food, feed, or other purposes.

When a crop is grown for food or feed, one of the requirements prior to the use of a pesticide on the crop, is that the U.S. EPA has established a pesticide residue tolerance.* However, a very effective pesticide that controls a pest in a seed crop, may not have an established tolerance on that particular crop. For example, a grower may want to use a pesticide on carrots grown for seed, but there is not a tolerance for that particular pesticide established on carrots. FlFRA

allows states to grant Special Local Need (SLN) registrations under FIFRA Section 24(c), which may allow waiving of the tolerance requirement on the seed crop, if certain restrictions are followed. In Oregon, there are numerous SLNs which allow for the use of pesticides on certain seed crops in which there are no tolerances established on the corresponding food or feed crops.

Pesticide Use On Crops Grown for Seed rule, OAR 603-057-0535: This rule mandates certain feeding restrictions must be followed, if a tolerance has not been established by EPA. The feeding restrictions prohibit the feeding of forage, seed screenings and other by-products. It also prohibits the use of seeds for sprouting. There are also disposal or composting requirements for seed screenings, and record keeping requirements.

* There are a few pesticides that EPA has exempted from tolerance requirements.

Oregon Rule: Limitations on Pesticide Products Containing Clopyralid, OAR 603-057-0378

In 2003, ODA enacted a rule to reduce the potential for clopyralid-treated materials, including grass clippings, from contaminated compost, OAR 603-057-0378. This rule was enacted in response to multiple reports of damage to landscape and garden plants from compost products found to be contaminated with the herbicide active ingredient clopyralid.

The rule prohibits the use of products containing clopyralid on certain sites, including residential lawns, commercial and public turf plantings, school grounds, parks, or recreational areas other than golf courses. This rule supersedes product label language. This means that, even if a pesticide user has a product with a pesticide label which provides directions for use on lawns or similar prohibited sites, the product **cannot** be used on the sites prohibited by the rule.

The rule also allowed uses on other sites, and a mandate that the label must clearly and prominently display the following statement:

''Use of this product in Oregon is limited to the sites stated on this label which are agricultural, forest, right-of-way, golf course or cemetery sites."

The rule requires manufacturers to include specific language on the label of products sold or distributed in Oregon by January 1, 2004.

For more information, contact the ODA Pesticides Program.

Oregon Rule: Prohibits the Application of Four Neonicotinoid Insecticides, OAR 603-057-0388

Due to concerns for the health of pollinators, Oregon has prohibited the use of any pesticide product containing the active ingredients dinotefuran, imidacloprid, thiamethoxam, or clothianidin, by any application method, to linden trees, basswood trees or other *Tilia* species. This means that in Oregon, even if a pesticide label allows for this use, it is prohibited to use the product on linden trees in Oregon.

The permanent rule went into effect on February 27, 2015. For more information on this rule, contact the ODA Pesticides Program. For the complete rule, see OAR 603-057-0388.

Buffers

To protect people, fish, wildlife, endangered plants or sensitive crops, pesticide labels may require or recommend buffers (no-spray zones) adjacent to the areas that need protection. These buffers help reduce pesticide exposure, which may occur because of drift or runoff. If fish or other aquatic organisms have been identified as needing protection, a maintained grassy filter strip or some other type of vegetation next to a waterway may also be mandated or recommended on the pesticide label.

In addition to buffers on pesticide labels, there can also be buffers required by state law, or court-mandated buffers. EPA's and ODA's websites are kept up to date regarding any court-ordered buffers. EPA facilitates some court-ordered buffers through Salmon Mapper or BulletinsLive2.

For additional buffers relating specifically to forestry applications, refer to the Forest Practices Act (FPA) and other laws. Under certain conditions, there are buffers established to protect fish, and aquatic habitat. In 2015, the Oregon legislature enacted ORS 527.672 pertaining to aerial herbicide applications: "When a forest operation involves applying herbicides by aircraft near an inhabited dwelling or school, the operator is responsible for leaving an unsprayed strip of at least 60 feet adjacent to the dwelling or school. The responsibility of the operator under this section is in addition to any responsibility of the aerial pesticide applicator under ORS chapter 634." Contact the Oregon Department of Forestry for interpretation of the FPA and ORS 527.672.

Co-existence: How to be a Good Neighbor

Oregon agriculture is a constantly changing and evolving industry. As Oregon agriculture diversifies, and the interface between agricultural and populated areas grows, so does the chance for drift exposure to crops and people — and the increased need for open communication. Crops such as grapes, berries, and nursery stock, are being planted in place of crops such as field crops and pasture. These newer crops can be particularly sensitive to certain types of herbicides, even when applied at low rates. Other crops that require commercial bees for pollination are replacing wind-pollinated crops.

As Oregon's economy expands, so does the need for additional housing and schools, which are often built in agricultural communities, and adjacent to agricultural land.

It is essential that agricultural practices, including pesticide use, be conducted in a respectful manner. Two key elements of co-existence are:

- Communication: Initiate open communication with other nearby agricultural producers, beekeepers and neighbors, and;
- Awareness: Be aware of your surroundings prior to product selection, and timing of applications, especially near people, sensitive crops and pollinators.

Below are some common examples to help achieve coexistence:

- If you are growing a crop and plan to use an herbicide near a sensitive crop, such as grapes, talk to the neighbor prior to making any pesticide application. Find out if the

crop is at a particularly vulnerable stage. Learn how to minimize risks and what other possible alternative products are available. Make sure you and your employees know how to prevent drift and minimize the chance of volatilization.

- If you farm next to a school, hospital, daycare facility, etc., time your applications when the fewest people are present, and select products that have low-odor.
- When applying pesticides next to blooming crops that may have bees visiting the crop or bee hives placed for pollination services, think about your selection of insecticide(s) and its toxicity to bees. Communicate with the grower of the blooming crop, and if possible with his or her beekeeper.
- Avoid making applications when the wind may carry the pesticide towards blooming crops. Talk to your neighbor to find out when the hives will be removed to avoid bee kills.

It is critical that good communication take place between producers, their employees, crop consultants and commercial applicators. Producers should provide information regarding nearby sensitive crops, pollinators, schools, waterways and endangered species to applicators.

Exposure of workers and handlers to pesticides is covered under the Worker Protection Standard (WPS). However, the awareness of the location of farm workers, and the location of migrant labor housing and occupants is an important part of co-existence.

Co-existence is about common sense, courtesy, good communication and having the best information to make informed decisions regarding pesticide selection and timing.

Co-existence: Being aware of culturally significant plants

Prior to any application being made, it is important to be aware of culturally significant plants in the treatment area. Oregon's nine federally recognized tribes rely on these plants for food, medicine and ceremonial purposes. Culturally significant plants not only grow on tribal reservations but can also be found on the tribe's ceded and ancestral territories. Contact tribal cultural resource experts in advance of an application to ensure that these significantly important resources are protected.

Oregon's nine federally recognized tribes are as follows:

- Burns Pauite Tribe
- Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians
- Confederated Tribes of Grand Ronde Community
- Confederated Tribes of Siletz
- Confederated Tribes of the Umatilla Indian Reservation
- Confederated Tribes of the Warm Springs
- Coquille Tribe
- Cow Creek Band of Umpqua Indians
- Klamath Tribes

For more information, please contact each of the tribes through the Legislative Commission on Indian Services website: https://www.oregonlegislature.gov/cis

Additional Considerations When Making Pesticide Applications

When making pesticide applications to homes, hotels, multi-family housing, hospitals, nursing homes, daycare facilities, commercial businesses etc., it is best to use common sense and to follow the suggestions listed below:

- Select pesticide products that have low odor,
- Do not spray over kids' or pets' toys, pet food and water bowls that may be on the floor or in the yard,
- Cover fish bowls and aquariums,
- When making an application to one part of a building that could affect people working or living in other parts of the building, check the label to see if the ventilation system needs to be turned off to those areas of the building prior to the application,
- Follow label directions for applications to areas where food is prepared, and
- If the label requires ventilation of the structure after a pesticide application, it is the pesticide applicator's responsibility to ventilate the structure and to notify the occupants when they may return to the building.

Pesticides and the Aging Applicator

As people age, pesticide exposure can impact some people differently than when they were young; this may result in additional harm. This includes exposure from the occasional spill or splash on the skin, or the more common inhalation of tiny droplets.

- Chemicals can enter the body more easily because the skin gets thinner and its elasticity decreases, making absorption easier.
- Our nervous systems change, so we don't notice irritation or burning sensations as fast as we did when we were young. Skin exposures last longer and do more damage because we don't sense them as quickly.
- Reduced blood flow and shrinking livers and kidneys can work together to slow the break down and removal of pesticides from the body.
- In addition, prescription drugs and pesticides can interact inside the body. Older adults may take more prescription drugs than younger people.
    - If someone is taking certain medications that put a burden on their liver and kidneys, those organs won't be as good at breaking down and removing pesticides from the bloodstream. This makes the same exposure last longer, potentially doing more harm.
- Disease also can reduce your body's ability to remove pesticides from the body.

If you're older than your coworkers, you can set a good example in the way you wear, clean, store, and inspect your PPE. It's never too late to improve your habits.

Chapter 4 Review Questions

1. Explain why the Oregon Department of Agriculture may have state regulations limiting the use of a pesticide in Oregon, even though a pesticide label on the container may allow for that use.

2. Explain why it is important to understand special regulations for crops grown for seed.

3. Why might a buffer zone be required? If so, name three reasons why it might be required.

4. What is coexistence?

5. Why might older applicators be affected more by pesticide exposure?

Answers can be found in the Appendix

5 Pests

Learning Objectives: Chapter 5

After studying this chapter, you should be able to:

- **Recognize pests by identifying physical characateristics and the damage they cause.**
- **Explain how insect pests grow and reproduce.**
- **Understand and describe the different insect life cycles.**
- **Know how diseases affect plants.**
- **Identify how weeds can affect crops, people and animals.**

Humans have competed with pests such as insects, rodents, wildlife, diseases, parasites, and weeds throughout history. Through the years, humans have added pesticides to their tactics to combat these pests.

The term pest refers to any organism that can adversely affect humans, animals, crops, structures, property, and natural resources.

- Pests compete with humans, domestic animals, wildlife and crops for food, water, nutrients, habitat, space, and light.
- Pests can spread disease to humans, domestic animals, wildlife and plants.

A good pesticide applicator knows how to select the best methods to reduce pest populations, and select control measures that work well together.

Having knowledge of what pests you may encounter, will help you to select the best methods of control.

In order for a pesticide applicator to effectively control the pest(s), an applicator needs to:

- Identify the pest and the damage symptoms.
- Know the pest's lifecycle and biology.
- Be able to select the best method(s) of control that will not damage or injure host plants, animals, and non-target organisms.

Pests can be placed into five main categories:

- Insects
- Plant pathogens (disease)
- Nematodes
- Weeds
- Animals (vertebrate pests)

Insects

There are three times as many insects as other animals in the animal kingdom. Insects are everywhere: in snow, water, air, soil, hot springs, and in or on plants and animals. Not all insects are pests, for example, termites in the forest consuming dead wood would not be considered a pest, however, termites living and feeding on a human-made structure would be. Certain insects compete with humans and animals for food. Some insects, such as human lice, survive by feeding on humans.

Insects are also an important part of the earth's ecosystem, and we could not survive without them.

Pesticide applicators must know some basic facts about in the lifecycle, biology, habitat and food source of insect pests. Insects can be broken into three groups by how they affect humans:

1. Species that are not considered pests and do not adversely affect humans. About 99 percent of all insect species are in this group. They are food for birds, fish, mammals, reptiles, and other insects. Many insects are beautiful and pleasant to look at.

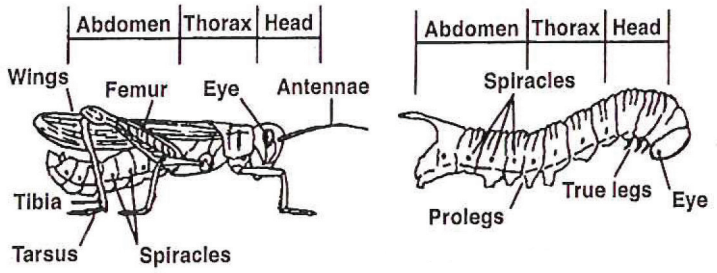
2. Beneficial insects. Includes predators and parasites that feed on pest insects, mites, and weeds. Examples are ladybird beetles (ladybugs) and the praying mantis. Insects that pollinate crops, such as honeybees, bumblebees and butterflies, also are beneficial. Other products we get from insects are silk and dyes for paints.

3. Pest insects. This group has the fewest members. These insects feed on, cause harm to, or transmit disease to humans, animals, plants, food, fiber, and structures. Examples of common insect pests are mosquitoes, fleas, ticks, termites, roaches, aphids and leaf or root beetles.

Note: Only about 3 percent of insects in agricultural fields are pests.

CHARACTERISTICS OF INSECTS

THE INSECT BODY



The Insect Body

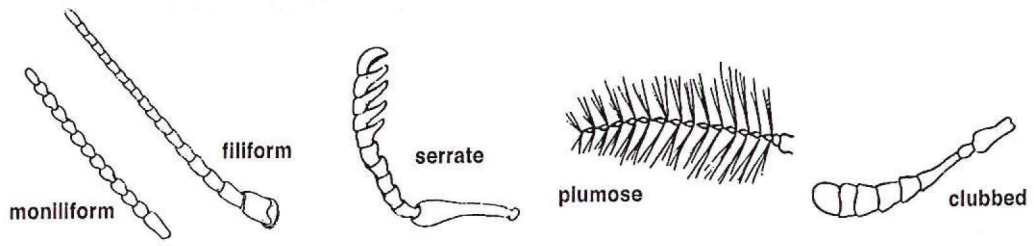
All adult insects have two traits in common:

1. They have three body regions—the head, thorax, and abdomen, and
2. They have three pairs of jointed legs.

The Head

Attached to the head are the antennae, eyes, and mouthparts. These parts vary in size and shape among species and can be helpful in identifying most insects.

TYPES OF INSECT ANTENNAE



Antennae are: Paired appendages usually located between or below the eyes. Antennae vary greatly in size and form. And are used in the classification and identification of insects.

Some common types of antennae and representative example insects are:

- **Clubbed:** segments increase in size away from the head. For example: Japanese beetles.
- **Filiform:** threadlike. The segments are nearly even in size. They are shaped like a cylinder. For example: ground beetles and cockroaches.

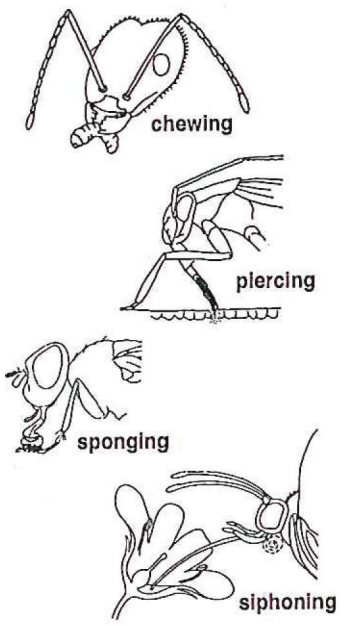
- **Moniliform:** like a string of beads. The segments are the same size and round in shape. For example: termites.
- **Plumose:** feathery. Most segments have whorls of long hair. For example: the male mosquito.
- **Serrate:** saw-like. The segments are more or less triangular in shape. For example, click beetles.

Mouthparts are different in various groups of insects and used to classify and identify insects. The type of mouthpart determines how the insect feeds and what type of damage it does.

There are four main kinds of mouthparts:

- **Chewing mouthparts.** These have jaws with teeth that bite and tear the food. Beetles, cockroaches, ants, caterpillars, and grasshoppers have these.
- **Piercing-sucking mouthparts.** These are long, slender tubes that the insect forces into plant or animal tissue to suck out fluids or blood. Mosquitoes and aphids have these.
- **Sponging mouthparts** are tongue like structures that have spongy tips to suck up liquids or food that can be made liquid by the insects saliva. Houseflies and blowflies have these types of mouthparts.
- **Siphoning mouthparts** are long tubes that the insect uses for sucking nectar. Butterflies and moths have these types of mouthparts.

INSECT MOUTHPARTS



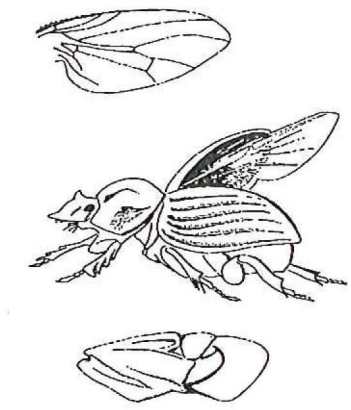
The Thorax

The thorax is the middle body segment that has three pairs of legs and sometimes one or two pairs of wings (forewings and hind wings) attached to it.

Legs come in many sizes, shapes, and functions and are helpful in indentifying insect. Insects use them for walking, running, jumping and climbing. The legs of some insects have become very specialized in some insects like the large jumping legs of a grasshopper. Crickets and some grasshoppers have developed an eardrum at the base of one of their leg segments.

Wings also vary in size, shape, and texture. The pattern of veins on the wings of an insect is often used to identify insect species. The forewings of some insects are hard and shell-like such as beetles, while grasshoppers have leathery forewings. The forewings of flies are thin, clear and are membrane-like. The wings of moths, butterflies, and mosquitoes are membranous, but are covered with scales.

WINGS



Abdomen

The abdomen of an insect has segments. Along the sides of the segments are openings called spiracles which the insect uses to breathe. The abdomen also contains the digestive and reproductive organs. Parts of the abdomen can be used in the identification of the insect such as the ovipositor, male genitalia, and cerci. Cerci are elongated appendages at the end of the abdomen in some insects, such as the earwig.

HOW INSECTS REPRODUCE AND DEVELOP

Reproduction

In most insects, males fertilize females, and then the females lay eggs. But, there are a few species that are different. Some parasitic wasps produce eggs without ever mating. In some insect species, there are no males. A few insects even give birth to live young.

Some insects lay eggs one at a time. Some lay them in groups. Some lay them in floating rafts. Some insects lay eggs in capsules that contain several eggs. Then, the adult carries them until they hatch. Sometimes, insects place their eggs inside trees, green plants, or the bodies of animals or other insects.

Eggs vary in size and shape (round, oval, flat, and elongated). Egg hatching is influenced by: temperature, humidity, and light.

Eggs can sometimes be used to identify the insect such as the glassy winged sharp shooter.

Insect Development (Metamorphosis)

Insects go through a series of changes as they grow from egg to adult. This process of growth is called metamorphosis.

After hatching from an egg, a young insect is called either a larva, nymph, or naiad. The young immature insect feeds for a while and grows. When it grows to the point where its skin can not stretch any further, it molts (sheds its skin) and a new skin is formed.

An instar is the stage of insect between successive molts; the first instar being between hatching and the first molt. The number of instars can differ between species. Sometimes, they vary with the temperature, humidity, and food supply. Most of the time, the heaviest feeding occurs during the last two instars.

There are four types of metamorphosis.

1. No metamorphosis

Some insects do not change much from when they hatch until they reach adulthood. The insect grows larger with each instar with little change in form, it reaches maturity. A nymph is a minature version of the adult. The food and habitat of the nymphs are often the same as the adults. The adults and nymphs are both wingless. Some examples of insects in this group are springtails, firebrats, and silverfish.

2. Simple or gradual metamorphosis

Insects in this group mature through three distinct stages: egg, nymph, and adult. The nymphs are like the adults both in appearance, how they feed and live in the same environment. The main difference is the nymph cannot reproduce or fly. Its body matures gradually with the wings and reproductive organs becoming fully developed only in the adult stage. Some examples of insects in this group include cockroaches, lice, termites, scales, and aphids.

3. Incomplete metamorphosis

Insects in this group also pass through three stages of development: egg, naiad, and adult. Adult and naiad are alike in some ways, but also have some very specific differences. The naiads live in the water and breathe through gills. The adults have wings and live near the water, but do not have gills. Some examples of insects in this group include: stoneflies, mayflies, and dragonflies.

4. Complete metamorphosis

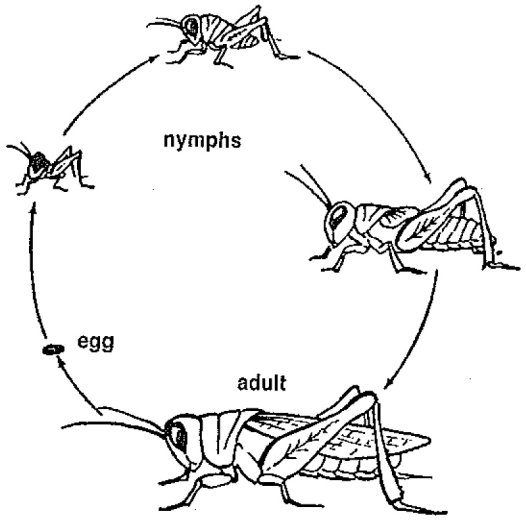
Insects in this group undergo four stages of development: egg, larva, pupa, and adult.

The larvae hatch from eggs. As they grow larger, they molt and usually have been 3 to 5 instars. The larvae come in several shapes and sizes, some with legs like caterpillars or have no legs like maggots.

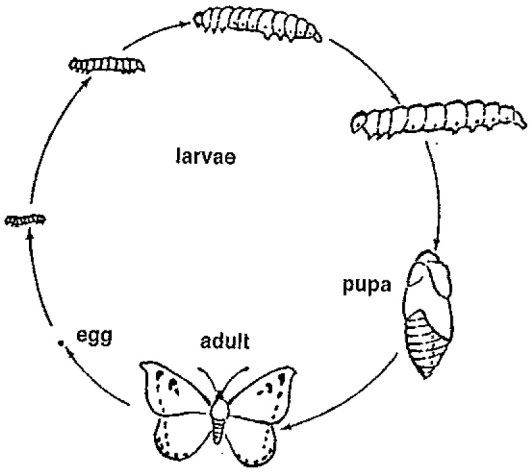
Larvae are recognized by most people as caterpillars, maggots or grubs, and look very different from the adult. The lavae and adults live in different habitats and eat different food. Caterpillars usually crawl on plants and eat the leaves, while the adult butterfly flies around drinking the nectar of blooming plants for food.

The pupa often is called the resting stage, but, the insect is not resting. While in this stage, the larva changes into an adult with legs, wings (usually), antennae, and a fully working reproductive system. Some examples of insects in this group include: lady bird beetle, black vine beetle, and monarch butterflies.

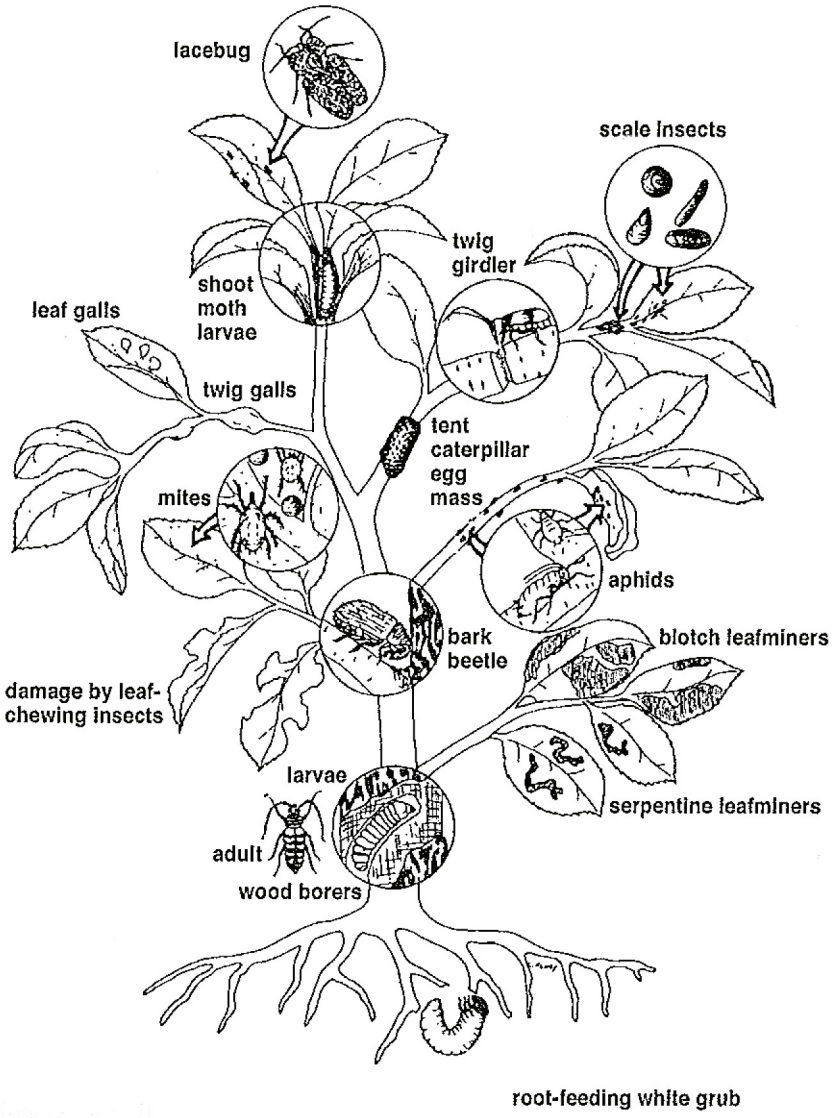
GRADUAL METAMORPHOSIS



COMPLETE METAMORPHOSIS



INSECTS AND INJURY



Insect-like pests

Spiders, ticks, mites, sowbugs, millipedes, and centipedes may seem like insects in appearance, life cycle and size, but they are not.

NON-INSECT PESTS

Miscellaneous pests

In the moist organic soils of western Oregon, one of the major pests is not an insect, but a Garden Symphylan. These are small, whitish "centipede-like" fast-moving creatures that measure about 0.25-inch long when mature, and have 6 to 12 pairs of legs (depending on age), which make them easy to differentiate from common soil insects, which have only 3 pairs of legs. Symphylans feed on sprouting seeds, roots, and other organic material.

Centipedes are flat, long, wormlike animals with each body segment having one pair of legs. They have chewing mouthparts. And some can give painful bites to humans. Centipedes live in protected places under tree bark or in rotting logs. They are fast and predaceous capturing and eating insects, spiders, and small animals. All centipedes have poisonous jaws.

Millipedes are shaped like an earthworm. They have many legs—two pairs on each body segment. Their mouthparts are adapted to feed on decaying organic material. They live in decaying leaf litter, rotting logs, and in damp debris near building foundations.

There is some debate about whether millipedes and centipedes undergo metamorphosis.

Mollusks

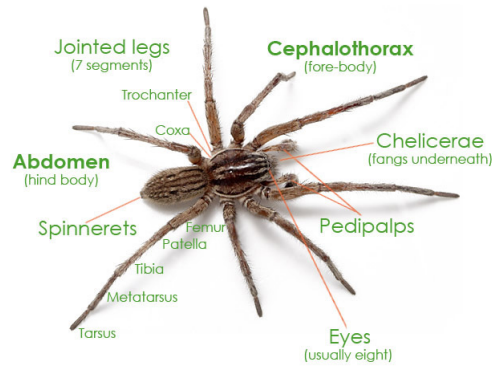
Mollusks are a large group of land and water animals. Examples are: slugs, oysters, clams, barnacles, and snails. They have soft bodies that don't have segments and are often protected by a hard shell.

Arachnids

Arachnids include spiders, mites, ticks, and scorpions. Adults all have eight legs and only two body regions, the head and the abdomen. They do not have wings or antennae.

Arachnids mature through metamorphosis. The eggs hatch into larvae with six legs. The larvae

SPIDER ANATOMY



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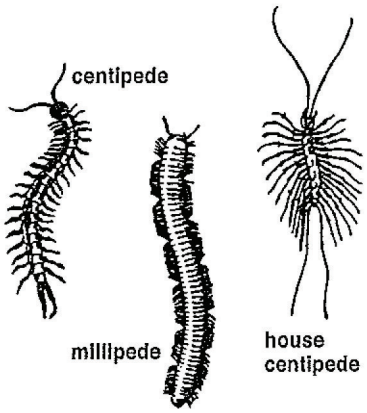
CENTIPEDES AND MILLIPEDES



SOWBUG

molt into nymphs with eight legs, and the nymphs molt into adults.

Spiders and scorpions have chewing mouthparts. Ticks and mites have a kind of piercing-sucking mouthparts. Ticks sometimes transmit diseases such as Lyme disease or Rocky Mountain spotted fever when feeding on humans and animals.

Crustaceans

Most of the animals in this class live in water. Lobsters and shrimp are in this group. There are a few members that live on land and can become pests. Sowbugs (often called pillbugs or rolly pollies) are black, gray, or brown and roll up into a ball when disturbed. Sowbugs live under stones, boards, blocks, or decaying wood. Some are pests of cultivated plants, but usually they are pests in moist basements and garages.

Snails and slugs

Land snails and slugs have two pairs of body parts that look like antennae. Their bodies are soft, smooth, and elongated. Snails have a spiral-shaped shell that they can withdraw completely inside it to protect themselves from predators and weather. Slugs do not have a shell and must look for a damp place to hide.

Snails and slugs feed on plants at night. They have rasplike tongues, they tear holes in foliage, fruits, and soft stems, damage root crops, and sometimes eat entire seedlings. Slugs are a significant pest in Western Oregon. Many slugs consume several times their own body weight each day.

Snails and slugs leave a slimelike mucous trail that dries into silvery streaks. These streaks are unattractive on floral and ornamental crops and crops to be sold for human food.

Slugs and snails lay eggs in moist, dark places. The young mature in a year or more, depending on the species. Adults might live for several years. They overwinter in sheltered areas.

Plant pathogens (diseases) or biologial agents

Biological agents are called pathogens and can cause plant diseases. A plant disease is a harmful condition that alters a plant's growth, appearance, or function. Some diseases can be cured with the use of pesticides, while others pesticides can be used to prevent the pathogen from infecting a plant. Pathogens include bacteria, fungi, viruses, protozoans, and nematodes. They are spread by wind, rain, insects, birds, snails, slugs, earthworms, contaminated equipment and tools, infected seed and plants, transplanted soil, nursery grafts, vegetative propagation (bulbs, tubers, roots, stem cuttings), pollen, dust storms, irrigation water, animals, and people.

Plant pathogens are parasites. They live and feed on the host plant. In order for the disease to develop, the pathogen must be present, the plant must be susceptible and the environment must be favorable for the pathogen to develop. Temperature and moisture are very important to

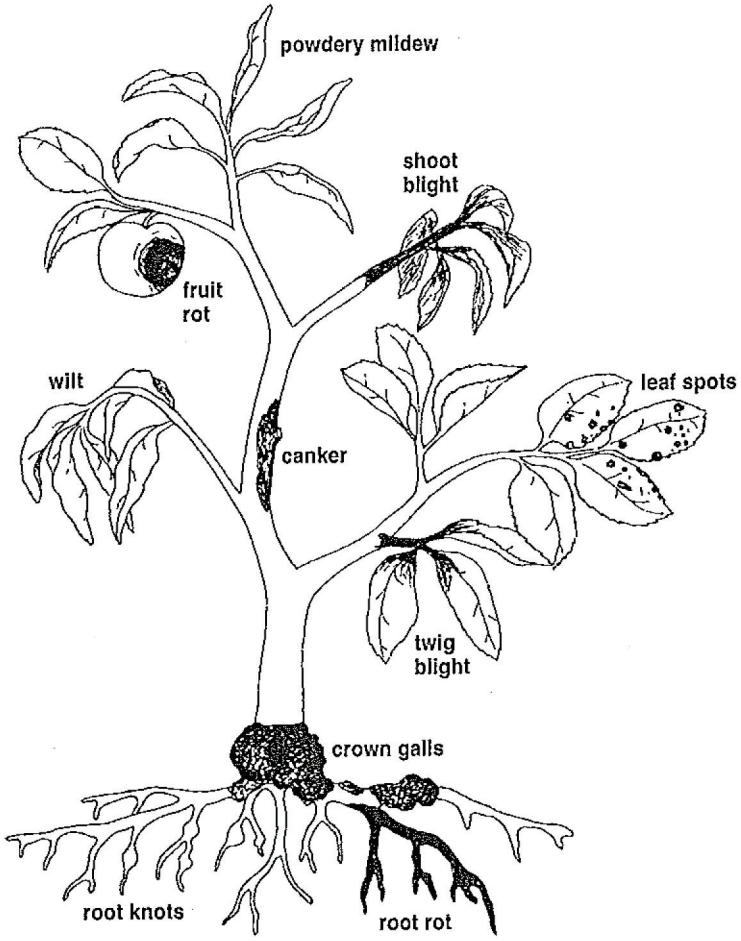
a pathogen's ability to develop.

Before an infection starts, the pathogen must get into the plant.

Plants respond to disease in three main ways:

1. The leaves curl or tissues overdevelop, forming galls, and swells.
2. The leaves become yellow because they do not have enough chlorophyll; and the affected plant area does not develop completely.
3. Tissues die, and spots are formed. These spots may coalesce and form a blighted appearance. Plants may wilt, or cankers may form on stems.

DISEASE SYMPTOMS



BACTERIA

Bacteria are one-celled organisms and can only be seen with a microscope. Bacteria reproduce by single cell division and multiply quickly under warm, humid conditions. Bacteria can attack any part of a plant. Several of the leaf spot and rot diseases are caused by bacteria.

Phytoplasmas are a special type of one-celled organism. Unlike bacteria, they can live only inside of host cells. Yellows diseases and some stunts are caused by phytoplasmas.

Blackleg and soft rot of potato are examples of a bacterial disease.

FUNGI

Fungi are a group of organisms that range from microscopic single-celled species to larger multicellular species. Examples of fungi include yeasts, rusts, smuts, molds, mildews, and mushrooms. Many fungi are beneficial to humans. Unlike plants, fungi cannot make their own food; they feed off other living or dead organisms, aiding in the decomposition of organic

matter that other organisms cannot break down. They play an important role in release and recycling of nutrients, helping to make soil more fertile.

There are also many species of fungi that are common plant pathogens. Fungi reproduce in a variety of ways, but many produce spores, which act the same way seeds do for plants. Fungal spores are microscopic and are produced in high numbers. Spores generally require high humidity to germinate and grow.

Powdery mildew is an example of a fungal disease.

VIRUSES

Viruses are smaller than bacteria and need a special microscope to be seen. Most viruses are recognized by the symptoms they cause on an infected plant. Viruses depend on the cells of other living organisms to reproduce and typically cannot survive long on their own.

Viruses invade healthy plants through wounds or during pollination. Insects that feed with piercing-sucking mouthparts (aphids, whiteflies and leafhoppers) and chewing insects (beetles) can transmit viruses while feeding. Nematodes also can spread viruses. Viruses are host specific, meaning one type of virus can typically only infect one type of plant. All plants are susceptible to viruses.

Apple mosaic virus is an example of a virus disease.

Nematodes

Nematodes are tiny eel-like roundworms and most can only be seen with a microscope.

Nematodes feed by sucking the contents of a plant cell through their needle-like mouth. Nematodes cause wilting, stunting, and reduced crop yield. Nematodes can spread other plant diseases when they feed. Some nematodes destroy the plant's root system so that it cannot take up enough water and minerals, which weakens the plant. Heavily infested plants wilt and do not grow well. Nematodes also can deform roots; and cysts; knots or small excessively hairy roots may form.

Not all nematodes feed on roots. Some nematodes feed on foliage, such as leaf chrysanthemum nematode, which causes angular sections of brown, dried tissue on the leaves late in the season.

Other nematodes are parasites of pets and livestock and cause problems such as heartworm in dogs and "worms" in livestock. Some nematodes are beneficial and feed on pest insects.

Weeds

When a plant grows where it is not wanted, it is called a weed. Any plant can be a weed. In fact, many weeds are plants that escaped from people's gardens.

Weeds can harm humans by:

- Causing skin irritation.

- Causing allergic reactions.
- By harboring pests such as rodents, ticks, or insects.

Weeds can harm desirable plants by:

- By contaminating the product at harvest.
- By competing for water, nutrients, light, space and habitat.
- By hosting pest insects, mites, vertebrates, or plant disease agents.
- By releasing toxins into the soil that can impact growth of desirable plants.

Weeds can affect grazing animals and livestock production by:

- Poisoning animals.
- Causing injury to eyes or mouth, or
- Causing an "off flavor" in milk and meat.

Weeds may be pests in water by:

- Hindering fish growth and reproduction.
- Increasing mosquito breeding, because of increased water stagnation.
- Plugging irrigation and drainage ditches, and channels.
- Hindering boating, fishing, and swimming.
- Decreasing water quality.

Weeds are dangerous on rights-of-way for these reasons:

- They block vision, road signs, and crossroads.
- They may trap water on roadways, causing puddling.
- Increase road repair costs.
- Increase fire hazards.

PLANT DEVELOPMENT (GROWTH) STAGES

Plants go through four stages of growth:

1. **Seedling:** which are very small and tender.
2. **Vegetative:** Rapid growth of roots, stem, and foliage. Nutrients and water move quickly through the plant.
3. **Seed production:** Plants use most of their energy toward reproduction. Water and nutrients go to making flowers, fruit, and seed.
4. **Maturity:** Movement of water and nutrients slow down in the plant and energy production slows down.

Understanding a plant's growth stages will help to decide which control measure(s) work best during certain stages of the plants lifecycle. Some stages are easier to control or take less time, money and effort, while other stages are harder to control

Weed life cycle: there are four things that trigger a plant to grow or go dormant.

- Daylength,
- Soil temperature,
- Air temperature, and
- Precipitation

Annuals

Plants that grow from seed, mature, and produce seed for the next generation in less than 12 months are called annuals. Many grass and broadleaved weeds are annuals.

- Summer annuals grow from seeds that germinate in the spring. They grow, mature, produce seed, and die before winter. Foxtail, pigweed, lambsquarters, and crabgrass are summer annuals.
- Winter annuals germinate in the fall. They mature, produce seed, and die before the next summer. Henbit, common chickweed, and annual bluegrass are winter annuals.

Biennials

Plants that have a 2-year life cycle are called biennials. During the first year, they grow from seed and develop a heavy root and compact cluster of leaves called a rosette. During the second year, they mature, produce seed, and die. Bull thistle and burdock are biennials. Sugar beets grown for seed also are biennials.

Perennials

When plants live more than 2 years, they are called perennials. Perennials may mature and set seed in the first year and can repeat that cycle for several years, potentially indefinitely.

Some perennial plants die back each winter. Others, such as trees, may lose their leaves, but they do not die back.

Most perennials grow from seed. Many perennials produce tubers, bulbs, rhizomes, or stolons. Rhizomes are rootlike stems that grow below the ground. Stolons are horizontal stems that grow above ground and produce roots, like strawberry plants.

- Simple perennials such as trees, shrubs, plantain, and dandelions usually reproduce by seeds. Some can also reproduce by root pieces if they are cut or severed during cultivation. The pieces can then grow into new plants.
- Bulbous perennials may reproduce by seed bulblets or bulbs. Wild garlic produces seed and bulblets above ground and bulbs below ground.
- Creeping perennials reproduce by seed, rhizomes, or stolons. Johnsongrass, field bindweed, and Bermudagrass are examples of creeping perennials.

HOW TO IDENTIFY A WEED

Arrangement of leaves

Alternate—There is one leaf at each level on the stem.

Opposite—There are two leaves opposite each other or paired.

Whorled—There are three or more leaves at each level on the stem.

Leaf structure

Compound—The leaf blade is divided into several leaflike parts called leaflets.

Simple—The leaf blade is a single piece and is not divided into separate leaflets.

Leaf shape

Ovate—The leaf is egg-shape, oblong, and broadest at the base.

Lanceolate—The leaf is lance-shape, longer than ovate, and usually pointed at the tip.

Linear—The leaf is long and narrow with parallel sides. Grasses have linear leaves.

Arrangement of the flowers

Single—The blossoms do not form clusters.

Inflorescence—The blossoms form clusters.

Terminal—The blossoms are at the top of the plant.

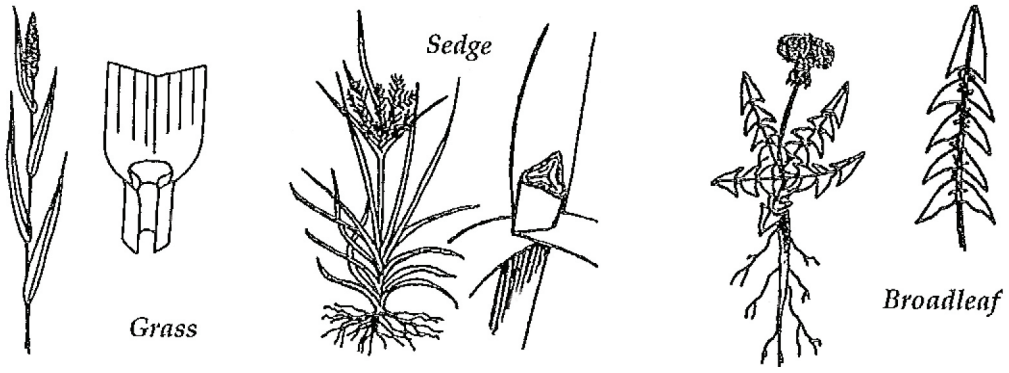
Axillary—The blossoms grow along the stem of the plant in the angles between the leaves and the stem. The angle between the leaf and the stem is called the leaf axil.

Flower parts

Petals—The petals are the expanded (and usually colorful) parts of the flower.

Sepals—The sepals are the greenish hull surrounding the flower when it is budding.

WEEDS



Major classes or groups of weeds

Grasses have round, hollow stems, stand upright and have narrow leaves with parallel veins. Grass seeds when sprouting have only one leaf at germination. For this reason, they are called monocotyledons (or monocots for short). Because their growing point is below the soil's surface, you can mow grasses without killing the plants. Most grasses have fibrous root systems and are desirable for erosion control along waterways.

Grasses have both annual and perennial species.

Sedges are similar to grasses, but they have triangular stems and three rows of leaves. They sometimes are listed under grasses on the pesticide label. These plants often are found in wet places but are occasionally found in fertile, well-drained soils.

Yellow and purple nutsedge are perennial sedges. They produce rhizomes and tubers or nutlets.

Broadleaf seeds divide into two parts, so the emerging seedlings have two leaves and are called dicotyledons (or dicots for short). The veins of their leaves are net-like. Broadleaf plants usually have a taproot and their root system is somewhat coarse.

All broadleaf plants have exposed growing points at the end of each stem and in each leaf axil. Perennial broadleaf plants also may have growing points on roots and stems above and below the surface of the soil.

Broadleaf weeds have annual, biennial, and perennial species.

Animals (vertebrate pests)

Vertebrates are animals with a jointed backbone. Humans are vertebrates, as are other mammals, birds, reptiles, amphibians, and fish. Most vertebrates are not pests and are a pleasant part of our environment. However, vertebrates can be pests. Sometimes birds, rodents, raccoons, or deer can damage crops or ornamentals, and infest dwellings.

Some birds and rodents eat the same food as humans and livestock. They often ruin more food than they eat.

Some mammals and birds attack livestock and poultry while others can spread disease to people and other animals. They can cause financial losses to farmers and ranchers each year.

Flocks of roosting birds are pests when they defecate on buildings.

Rodents are a hazard to public health when they are in homes, restaurants, offices, or warehouses. Rodents, other mammals, and some birds can carry serious diseases such as rabies, distemper, plague, and tularemia.

You might need a permit or other permission before you may bait, hunt, trap, or relocate a vertebrate pest. Contact your regional office of the Oregon Department of Fish and Wildlife for details. To find out where your regional office is, or for more details, call Oregon Department of Fish and Wildlife, 503-947-6000

Fact and picture sheets can help you know your vertebrate pests. They are handy and easy to use. Ask the Extension Service if they have them, or if they know where you can get them.

Chapter 5 Review Questions

1. Define a pest organism.

2. Name the three main body parts of an insect.

3. Give three examples of pests that look like insects but are not.

4. Explain what causes diseases in plants.

5. Name the five pathogens that are associated with plant diseases.

6. Describe three ways weeds can be considered a pest.

7. Name three major groups of weeds.

8. Describe the different plant lifecycles.

9. What is a vertbrate pest and what does “vertebrate” mean?

Answers can be found in the Appendix

Appendix

Chapter 1 Review Questions

1. What State agency(s) regulate pesticide applications made to State and private forest lands?

The Oregon Department of Forestry (ODF), the Oregon Department of Agriculture (ODA) and the Oregon Occupational Safety and Health Administration (OR-OSHA) all have regulatory authority over different aspects of pesticide applications on State and private forest lands in Oregon.

2. What are the State laws that specifically regulate pesticide applications made to forestland?

The Oregon Forest Practices Act (FPA), the Oregon Forest Practices Chemical Rule, and the Oregon Pesticide Control Law.

3. What is the primary State law that regulates pesticide applications in Oregon?

The Pesticide Control Law (Oregon Revised Statute [ORS] Chapter 634).

4. Which State agencies enforce the Worker Protection Standard (WPS) in Oregon?

Both OR-OSHA and ODA enforce different aspects of the WPS.

5. Who does the Worker Protection Standard (WPS) apply to?

WPS applies to agricultural establishments directly related to the production of an "agricultural plant," which includes farms, forests, greenhouses and nurseries.

6. Who does the Hazard Communication Standard (HCS) apply to?

The HCS applies to anyone working around hazardous chemicals, not just pesticides.

7. What agency enforces the back-siphon/anti-siphon prevention device rules for chemigation?

The Oregon Water Resources Department (OWRD).

Chapter 1 Review Questions

8. Who can make pesticide applications on a school campus?

Anyone who is properly licensed.

Applications made to a public school campus can be made by Public Pesticide Applicators (PPA), or Commercial Pesticide Applicator (CPA) working for a Commercial Pesticide Operator with the appropriate license categories. Pesticide Apprentices and Immediately Supervised Trainees can make pesticide applications under the supervision of a PPA or CPA within the categories on the PPA or CPA's license.

Applications made to a private school campus can be made by Commercial Pesticide Applicator (CPA) working for a Commercial Pesticide Operator with the appropriate license categories. Pesticide Apprentices and Immediately Supervised Trainees can make pesticide applications under the supervision of a CPA within the categories on the CPA's license.

9. Who do you contact in the event of a pesticide spill?

Oregon Emergency Response System (OERS), 1-800-452-0311.

10. Who's responsible for providing Worker Protection Standard protections?

Owners and operators of agricultural establishments, including timber tract operations, nurseries, greenhouses, and farms.

11. Who is protected under the WPS?

Workers and Handlers on the agricultural establishment. Bystanders off the agricultural establishment.

12. What types of protections shield Workers and Handlers that file a complaint or provide information in an investigation of alleged WPS non-compliance?

Retaliation protection under the WPS rule.

13. Under what conditions must agricultural employers notify Workers and Handlers of pesticide applications?

They must post a warning sign if REI is greater than 48 hours on outdoor applications. They must keep workers and all other persons, other than appropriately trained and equipped handlers involved in the application, out of the treated area and the AEZ within the boundary of the agricultural establishment. They must keep a record of their applications for two years.

14. What was the Application Exclusion Zone (AEZ) designed for, and what is its range?

The AEZ was designed to help prevent pesticide exposures to both workers and other persons. The AEZ can range up to 150 feet depending on the application equipment.

Chapter 2 Review Questions

1. What license type would a farmer need in order to legally apply a restricted use pesticide to his field, orchard, forest or nursery?

A farmer or agricultural producer would need to obtain a Private Pesticide Applicator license to be able to purchase or supervise the use of restricted use pesticides on farmland that they own, lease or rent.

2. What type of license would a person need in order to legally make pesticide applications, as a business, to someone else's property?

Pesticide application businesses must obtain an Oregon Commercial Pesticide Operator license to apply any type of pesticide products to someone else's land including general use pesticides, restricted use pesticides, organic pesticides and/or 25b products regardless of the type of business ownership.

3. What type of license would a person or business need in order to legally to sell or distribute restricted use pesticides?

A person or business would need a Dealer License to sell or distribute restricted use pesticides in Oregon.

4. If a business has multiple locations, how many Dealer Licenses would be needed to sell and/or distribute restricted use pesticides at all locations?

Each location or branch would need to obtain their own Dealer License.

5. Can a Pesticide Apprentice supervise pesticide applications made by an Immediately Supervised Trainee?

No, a Pesticide Apprentice is not a fully certified and licensed pesticide applicator, and therefore cannot supervise pesticide applications made by others.

6. Can a Pesticide Apprentice and an Immediately Supervised Trainee be supervised by a licensed Commercial or Public Pesticide Applicator who is not physically present at the application site?

If supervising an Immediate Supervise Trainee, the supervising Commercial or Public Pesticide Applicator must be located on the application site and available at the specific point of pesticide use within five minutes. If supervising a Pesticide Apprentice, the supervising Commercial or Public Pesticide Applicator need not be on site but must be reasonably available (e.g. mobile phone, 2-way radio) for any needed consultation. Pesticide applications made are limited to the license categories held by the supervising applicator.

Chapter 2 Review Questions

7. Who needs to be licensed as a Pesticide Consultant?

Anyone who provides technical advice and/or use recommendations on the use of restricted use pesticides must have a Pesticide Consultant license in Oregon.

8. Can Pesticide Consultants purchase restricted use pesticides to make applications to their own farmland?

No, a Pesticide Consultant license is not an applicator license. If an Oregon Pesticide Consultant needs to apply restricted use pesticides to their own agricultural land, they can apply for a Private Pesticide Applicator license without having to take the Private Applicator's exam.

Chapter 3 Review Questions

1. Who must keep pesticide application records?

All Commercial Pesticide Operators (CPO). In some instances, Commercial Pesticide Applicators (CPA) and Private Pesticide Applicators making applications of RUPs. Public Pesticide Applicators using RUP or power equipment also are required to keep application records.

2. What information does a dealer need to record?

- Pesticide Dealers must record the name, address and pesticide applicator license number of the purchaser,
- The date of sale,
- The identification of the RUP purchased (trade name and manufacturer or EPA registration number and,
- The quantity purchased.

3. How long must pesticide application records for Commercial Pesticide Operators, Public Pesticide Applicators, Pesticide Consultants and Commercial Pesticide Applicators not working for an operator be kept?

Pesticide application records for the above license holders must be kept for three (3) years.

4. How long must a Pesticide Dealer keep sales records?

A dealer must keep sales records of restricted use pesticides for three (3) years.

Chapter 3 Review Questions

5. What information does a Public Pesticide Applicator, Commercial Pesticide Operator, Pesticide Consultant and Commercial Pesticide Applicator (limited instances) need to keep on their application records?

- The name, address and telephone number or the person or business who the pesticide application was made.
- The location of the land or property where the application was made.
- The date and approximate time of the application (the time you began and finished the application at each job site).
- The supplier of the pesticides applied.
- Identification of the pesticide product to include either, the trade name and manufacturer of the product or the EPA registration number.
- The amount or concentration that was used in the units of measure from the pesticide label.
- The specific property (use sites), crop or crops to which the pesticide was applied.
- The summary information of the equipment, device or apparatus used (what application equipment was used to make the application) and, if applied by aircraft, the F.A.A. number.
- The name and license number of the pesticide applicator(s), supervising applicators, Pesticide Apprentices and Immediately Supervised Trainee(s).
- Records must be kept for three (3) years.

6. Under USDA regulations, a Private Pesticide Applicator has how many days to record information about a restricted use pesticide (RUP) application?

Under federal law, a Private Pesticide Applicator must record applications of restricted use pesticides (RUPs) within 14 days of the application.

Chapter 3 Review Questions

7. Under USDA regulations, what information does a Private Pesticide Applicator need to keep for their restricted use pesticide (RUP) applications?

- Name of applicator(s)
- Applicator License Number(s)
- Month/day/year of the application
- EPA Registration Number
- Brand/Trade or Product Name
- Crop, Commodity, or site of application
- Size of treated area
- Total amount of pesticide concentrate applied (actual product, not diluted solution)
- Field ID/location
- The law allows the Field ID/location to be recorded as county, range, township and section (while not required, subsection is permitted)
- Maps or written descriptions
- A USDA identification system which uses maps and a numbering system to identify field locations
- Global Postitioning System (GPS)

8. Under the Worker Protection Standard, what information does an agricultural employer need to maintain for pesticides that are used on the agricultural establishment?

WPS requires that the following information be maintained by the agricultural employer for each WPS-labeled pesticide used on the agricultural establishment for two years after the date of expiration of the applicable restricted-entry interval.

- A copy of the safety data sheet (SDS).
- Product name and EPA registration number,
- Active ingredient(s) in the pesticide product
- The crop or site treated and the location. Description of the treated area.
- The date(s) and times the application started and ended.
- The duration of the restricted-entry interval (REI) for that application. The REI is stated on the pesticide label and may vary by crop or use pattern.

Chapter 4 Review Questions

1. Explain why the Oregon Department of Agriculture may have state regulations limiting the use of a pesticide in Oregon even though a pesticide label may allow for that use.

There are a number of reasons that a state may adopt special pesticide use regulations. Common reasons include that there are: documented incidents of misuse, damage, injury or death; sensitive crops or vulnerable watersheds; or threatened or endangered species.

In some cases, it may be difficult for pesticide users to control what happens to treated crops or materials containing treated crops. For example, sometimes vegetation is treated with a long residual herbicide, such as clopyralid. If the vegetation becomes a component of commercial compost, the compost may cause harm or damage the property of others. It may be necessary to enact a rule to prevent the application.

In other cases, ODA has evidence that a pesticide or class of pesticides may pose an unacceptable hazard to a beneficial insect. For example, to protect bees, ODA prohibited the use of four neonicotinoid insecticides for use on linden trees.

For more information on these products, see OAR 603-057-0378 and OAR 603-057-0388.

2. Explain why it is important to understand special regulations for crops grown for seed.

Prior to allowing a pesticide to be used on a food or feed crop, EPA must establish a pesticide residue tolerance. A tolerance is established prior to the crop being added to a pesticide label.

EPA may allow the use of pesticide on a crop grown for seed (seed to be planted) if there are specific label restrictions which can be additionally enforced by state rule. If the state grants a pesticide registration on a crop grown for seed in which there is no tolerance, the label will prohibit the feeding of seed and by-products.

For more information on Crops Grown for Seed, see OAR 603-057-0535.

3. Why might a buffer zone be required and name three reasons why a buffer zone might be required.

Buffers might be required to protect people, fish, water, wildlife, endangered plants or sensitive crops. Buffer information will be on the pesticide label, or the label will provide a link to a website.

- To protect water.
- To protect fish.
- To protect people in occupied dwellings.

Chapter 4 Review Questions

4. What is coexistence?

Co-existence is about getting along with surrounding property owners by making informed decisions, consideration of others and increased communication between pesticide users, and in certain cases, beekeepers.

5. Why might older applicators be more affected by pesticide exposure?

A variety of factors, including thinning of skin, use of prescription drugs, and a higher incidence of health complications.

Chapter 5 Review Questions

1. Define a pest organism.

An organism is anything that can harm, spreads disease, or competes with humans, domestic animals, or crops.

2. Name the three main body parts of an insect.

Head, thorax and abdomen.

3. Give three examples of pests that look like insects, but are not.

Spiders, centipedes, millipedes, crustaceans, and mollusks.

4. Explain what causes diseases in plants.

Diseases are caused by biological agents called pathogens.

5. Name the five pathogens that are associated with plant diseases.

Bacteria, fungi, viruses, protozoans, and nematodes.

6. Describe three ways weeds can be considered a pest.

They can cause skin irritation, be poisonous to people or animals, clog ditches and canals. They can block road signs, cause snow drifts, break up asphalt and concrete sidewalks, crack or damage and sewer lines. They can cause swimmers to become entangled and damage boats. They can harbor insect and vertebrate pests, and diseases. They compete with desirable pests for nutrients, light and water.

Chapter 5 Review Questions

7. Name the three major groups of weeds.

Grasses, broadleaves and sedges.

8. Describe the different plant lifecycles.

Annuals germinate from seed, mature and produce seed in less than one year.

Biennials take two years to complete their lifecycle. They germinate from seed, develop a taproot and rosette the first year of it's life and in the second year, they mature, produce seed and die.

Perennials have the potential to live more than two years. They can germinate from seed or reproduce from plant cuttings such as roots or rhizomes.

9. What is a vertebrate pest and what does vertebrate mean?

Vertebrates have jointed backbones and some common vertebrate pests are rodents, raccoons, deer, and birds.

Oregon Agencies Involved in Pesticide Regulation

A full listing of all Oregon agencies can be found on the Oregon.gov website.

OREGON DEPARTMENT OF AGRICULTURE (ODA)

635 Capitol St. NE
Salem, OR 97301
Phone: (503) 986–4550

Pesticides Program

Phone: (503) 986–4635
www.oregon.gov/oda/programs/pesticides/pages/aboutpesticides.aspx
For Pesticide Collection events, visit:
www.oregon.gov/ODA/programs/Pesticides/Water/Pages/PesticideStewardship.aspx

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

811 SW 6th Avenue Portland, OR 97204-1390
In the Portland area, Phone: 503-229-5696
Outside of the Portland area, 1-800-542-4011
http://www.deq.state.or.us
For Pesticide Collection events, visit:
www.deq.state.or.us/wq/pesticide/pesticide.htm

OREGON DEPARTMENT OF FORESTRY

2600 State Street
Salem, OR 97310
Phone: 503-945-7200
www.oregon.gov/ODF/Pages/index.aspx

OFFICE OF STATE FIRE MARSHAL (OSFM)

4760 Portland Road NE Salem, OR 97305-1760
Phone: 503-378-3473
www.oregon.gov/OSP/SFM/pages/cr2k_home.aspx
Hazardous Substance Information Hotline, 1-800-454-6125 or (503) 378-6835

OREGON HEALTH AUTHORITY (OHA)

500 Summer St. NE, E-20 Salem, OR 97301-1097
Phone: 503-947-2340
www.oregon.gov/oha/pages/index.aspx

Public Health Division

800 NE Oregon St., Portland, OR 97232
Phone: 971-673-1222
https://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Pages/index.aspx

OREGON OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OR-OSHA)

350 Winter St. NE
Salem, OR 97309-0405
Phone: 800-922-2689
www.orosha.org

OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW)

4034 Fairview Industrial Drive SE
Salem, OR 97302
Phone: 503-947-6000
www.dfw.state.or.us

OREGON DEPARTMENT OF TRANSPORTATION (ODOT)

355 Capitol St. NE, MS 11
Salem, OR 97301-3871
Phone: 888-275-6368
Motor Carrier Division
www.oregon.gov/ODOT/MCT/pages/index.aspx

OFFICE OF EMERGENCY MANAGEMENT (OEM)

3225 State Street
Salem, OR 97309-5062
Phone: 503-378-2911
www.oregon.gov/OMD/OEM/Pages/index.aspx

OREGON EMERGENCY RESPONSE SYSTEM (OERS)

In Oregon, 1-800-452-0311
Outside Oregon, (503) 378-4124

OREGON POISON CENTER

1-800-222-1222
www.ohsu.edu/xd/outreach/oregon-poison-center/index.cfm

OREGON WATER RESOURCES DEPARTMENT (OWRD)

725 Summer St. NE, Suite A
Salem, OR 97301
Phone: 503-986-0900
www.oregon.gov/owrd/pages/index.aspx

Acronyms used in this Addendum

AGENCIES AND ORGANIZATIONS

- **ODA:** Oregon Department of Agriculture
- **DEQ:** Department of Environmental Quality
- **ODF:** Oregon Department of Forestry
- **ODFW:** Oregon Department of Fish & Wildlife
- **ODOT:** Oregon Department of Transportation
- **OR-OSHA:** Oregon Occupational Safety and Health Administration
- **OHA:** Oregon Health Authority
- **OSFM:** Oregon State Fire Marshal
- **OWRD:** Oregon Water Resources Department
- **OPHD:** Oregon Public Health Division, Drinking Water
- **OPC:** Oregon Poison Control
- **OWEB:** Oregon Watershed Enhancement Board
- **OSU:** Oregon State University

OTHER ACRONYMS

- **ORS:** Oregon Revised Statute
- **OAR:** Oregon Administrative Rule
- **SLN:** Special Local Need

- **IPM:** Integrated pest management
- **NPDES:** National Pollutant Discharge Elimination Permit (see DEQ)
- **PGP:** Pesticide General Permit, see DEQ
- **RCRA:** Resource Conservation and Recovery Act (see DEQ)
- **PSP:** Pesticide Stewardship Partnership (see ODA)

INVESTIGATION TYPES

- **AUO:** Agricultural use observation
- **AUF:** Agricultural use follow-up
- **NUO:** Nonagricultural use observation
- **NUF:** Nonagricultural use follow-up
- **EUP:** Experimental use permit observation
- **PEI:** Producer establishment inspection
- **MPI:** Marketplace inspection
- **IMP:** Import inspection
- **EXP:** Export inspection
- **ARI:** Applicator record inspection
- **DRI:** Dealer record inspection
- **ROL:** Report of loss investigation, and
- **PARC:** Pesticide Analytical and Response Center investigation (PARC).

TYPES OF ENFORCEMENT ACTION

- **LOA:** Letter of advisement
- **NOV:** Notice of violation
- **CP:** Civil penalty